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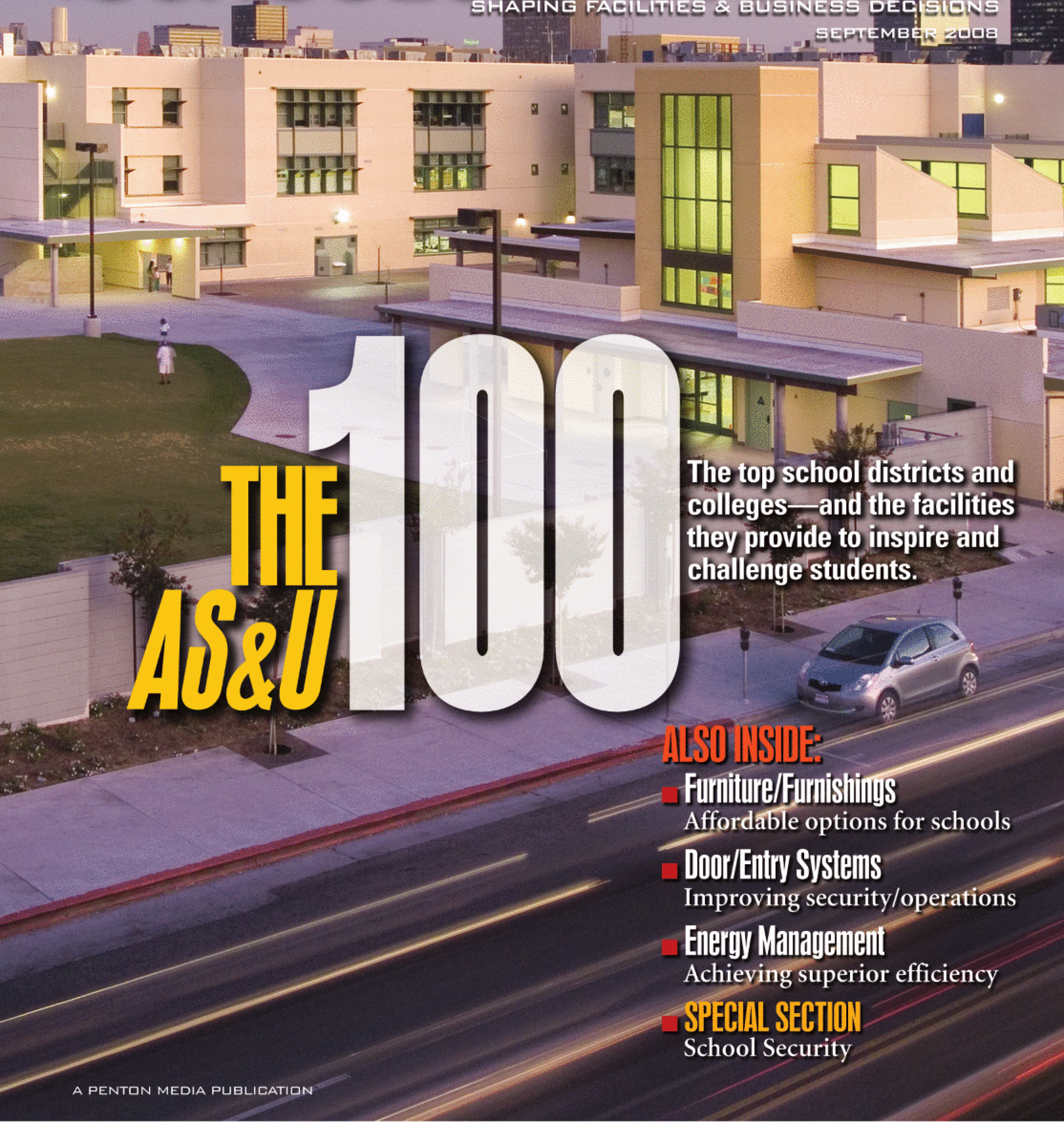
SHAPING FACILITIES & BUSINESS DECISIONS

SEPTEMBER 2008



THE AS&U 100

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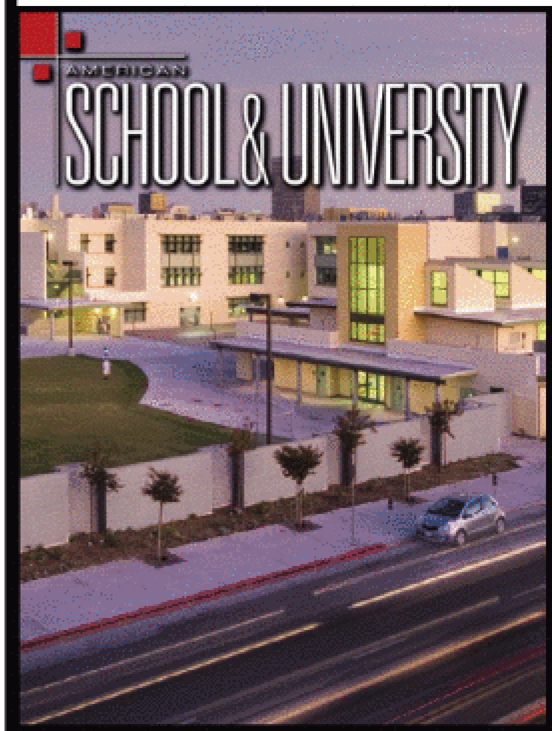

On the Cover: Charles H. Kim Elementary School, Los Angeles Unified School District (No. 2 on the *AS&U* 100)
Architect: Harley Ellis Devereaux
Photographer: RMA Photography, Inc.

Save the Dates

AS&U announces entry dates for the 2009 Educational Interiors Showcase and Architectural Portfolio: EIS entry forms due **March 4**, portfolios due **April 3**. AP 2009 entry forms due **June 3**, portfolios due **July 3**.

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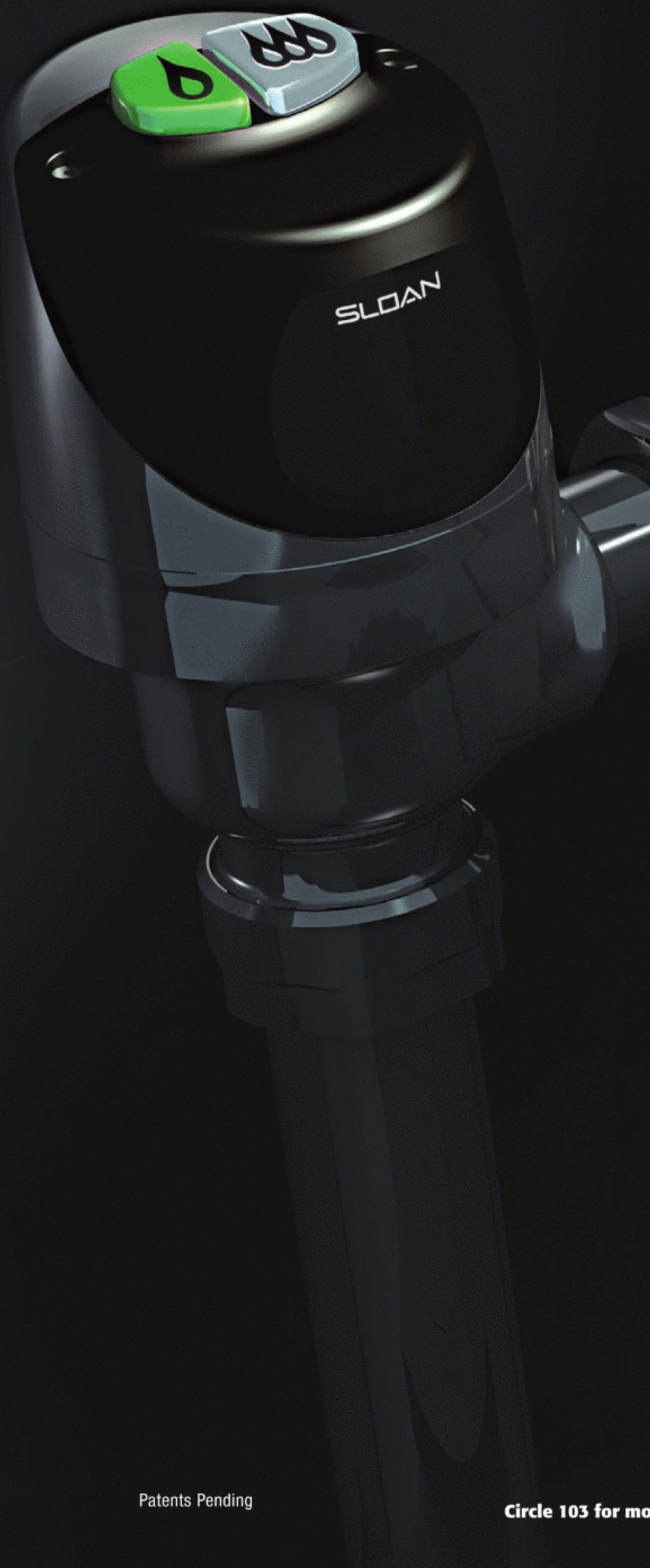

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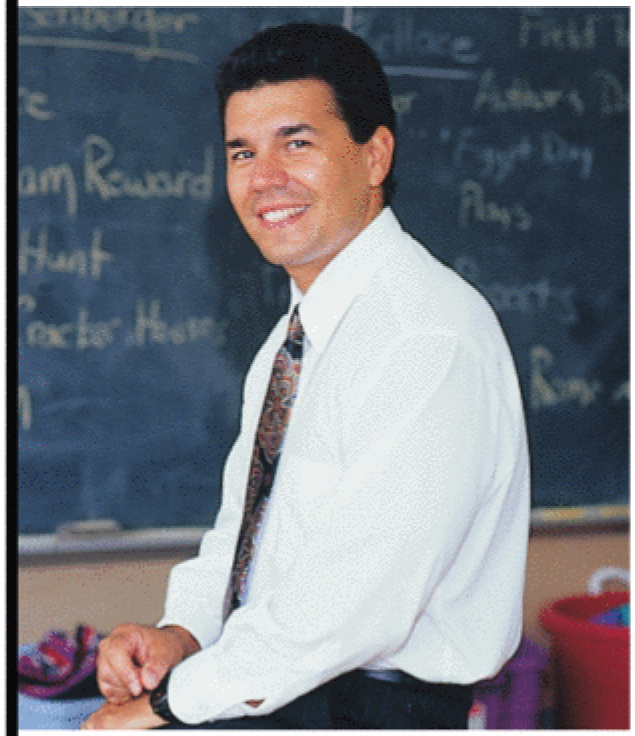

With school back in session, what steps have you taken to ensure the safety of students, staff and facilities?

A recent survey conducted by *American School & University* and *Access Control & Security Systems* magazines provides valuable insight into what school districts and higher-education institutions are doing in the way of security implementation, equipment installed and planning to be installed, spending on security, as well as top security concerns. You can view the survey, part of a special supplement in the July issue of both magazines, at www.ASUmag.com/supplements.

Among additional insight not reported in the published supplement: When asked what security measures school districts currently have in place, the most common included administrators or other staff walking the halls more often; intervention programs; and zero-tolerance policies. Among the measures districts plan on adding in the 2008-09 school year include strict rules regarding building access and implementing a student hotline/encouragement of anonymous tips.

Colleges and universities place more reliance on unarmed school security officers; armed sworn police officers; and student hotlines/encouragement of anonymous tips. For the 2008-09 school year, colleges and universities plan on adding strict rules regarding building access; administrators or other staff walking the halls more often; and intervention programs for troubled students.

Security decisions at both school districts and higher-education institutions most often are made as a result of proactive planning. At school districts, pressure/requests from fellow administrators is the next most important factor influencing security decisions. At colleges and universities, pressure/requests from students is among the most important influencers.

When asked about the timing of security threats, K-12 institutions most frequently indicate threats occur during school hours; colleges and universities are more likely to see threats during late-night hours. ■

jagron@asumag.com

WEB 101

And speaking of security ...

Some comments from our blog regarding the following scenario: The Harrold (Texas) school board has decided to allow employees to carry concealed weapons if they have a state permit and permission from the administration. Will armed teachers and other employees enhance security and student safety?

•"I do not think it is prudent to have the teachers and administrators carry weapons. Any student who gains control of the weapon can cause a scene. As a youngster, I would feel threatened by a teacher who 'carried' and would find them unapproachable. Also, who will pay for the firearms–the voters?"

•"I cannot believe that a school district would even consider giving teachers and other employees 'permission' to carry concealed weapons. If I were a teacher in this school I would resign immediately. This is just a horrible accident waiting to happen. Schools should be a safe haven for students and the absolute last place you expect to find weapons."

•"The bad guys will have guns regardless of what rules or laws we pass. It is prudent to have the right people armed. By right people, I mean those who not only have had the proper background checks and received the appropriate training on safety, the use of deadly force, etc., but also have had psychological evaluation to ensure that they are properly prepared to employ force if it is required."

Visit our blog via our homepage at asumag.com or directly at http://blog.asumag.com/schoolhouse_beat and let us know what you think.–*Susan Lustig*

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INSIDE: ONLINE PROCUREMENT

NATIONWIDE BUYING POWER

More than 32,000 public agencies, including thousands of schools and universities, have saved money and streamlined their purchasing processes by using the U.S. Communities Government Purchasing Alliance.

U.S. Communities, a non-profit organization based in California, enables education institutions to save money on purchases by pooling the buying power of public agencies from coast to coast. Schools and universities can piggyback on contracts that have been put out for competitive bid by lead public agencies.

Schools and universities do not have to pay to use the system; vendor fees cover the costs of operating U.S. Communities.

The system accounts for the purchasing of $1 billion a year in goods and services, U.S. Communities says, and about 400 additional public agencies sign up each month to participate. One of the organization's more recent efforts is a Green Initiative, in which U.S. Communities "has identified … those items in its contracts that meet third-party environmental certification standards."

SYSTEM UPGRADE CUTS THROUGH BUREAUCRACY

The Volusia County (Fla.) school district's enhancement of its online purchasing system has received an honorable mention in the 2008 Best Practice in Public Procurement Awards from the Florida Association of Public Purchasing Officers.

Responding to complaints that the time between ordering and receiving items was too long, the district upgraded its system to allow users to create an online shopping cart.

Prior to that, a teacher would have to go online, write down information on the items to be bought, and give the list to a clerk, who would enter the data into a requisition system.

The shopping cart feature allows teachers to select an item from the catalog, enter the quantity requested, and complete an order. A clerk approves the order without having to re-key it.

"At a high school, this can save three to four hours per week of data-entry work for the clerk and reduces the chance for processing errors," the district says. "In addition, it speeds up the time it takes the orders to get to the warehouse and thus improves delivery time."

Another benefit is that teachers now can go online and check the status of their orders.

AWARD-WINNING SYSTEM

eVA, the commonwealth of Virginia's e-procurement system, has received the "2007 Innovation In Government Award" at the 3rd Annual Excellence in Virginia Government Awards (EVGA) Ceremony.

Since 2001, the Commonwealth has used eVA to process more than 1.5 million orders to buy $14 billion of products and services.

"eVA allows us to buy goods and services faster, easier, and at best value using a single online source, saving our taxpayers money while streamlining processing for our vendors," says Ron Bell, director of the Division of Purchases and Supply for Virginia's Department of General Services. "Through the eVA program, we have cut order-processing costs up to 50 percent and reduced processing time in some cases up to 70 percent."

The award program is presented by Virginia Commonwealth University's L. Douglas Wilder School of Government and Public Affairs. ■

Virginia statistics

Who's using eVA, the Commonwealth of Virginia's online purchasing system for state and local governments?

171	State government agencies, including universities, colleges and community colleges
492	Localities, including school districts
32,652	Vendors

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CONSTRUCTION ZONE

GREEN/SUSTAINABLE DESIGN

Energy-saving school

River Crest Elementary School, Hudson, Wis., has almost 600 students in grades K to 5 and consists of four sections per grade with two early-childhood classrooms. Teachers favored a small learning community layout with shared resource and storage rooms between classrooms. This provides storage areas for kits and other teaching aids, and a shared resource room for tutoring, testing and small-group activities.

The school is designed to perform 30 to 35 percent more efficiently than the LEED baseline. Water-use reductions of 40 percent are anticipated through the use of low-flow lavatories, dual-flush water closet levers, waterless urinals and other water-saving fixtures. The windows provide for views and daylight, while controlling glare and unwanted heat gain.

The site itself, designed to retain stormwater on-site, will be landscaped with native prairie grasses to eliminate watering and reduce maintenance, and will serve as an outdoor classroom.

The project is targeted for LEED gold certification.

The architectural and construction management firm is Hoffman, LLC (Appleton, Wis.).

River Crest Elementary School, Hudson, Wis.

University of Oregon in Portland, White Stag Block. Photo courtesy of Sally Painter Photography

Going for gold

This fall, The University of Oregon in Portland will move some of its classes to a 103,000-square-foot refurbished facility. The building merges parts of several buildings into a single complex, which marks a 57,000-square-foot increase from its previous location.

The facility features state-of-the-art classrooms, labs and studios; space for exhibits, lectures, and private and public events for up to 200; a new library and learning commons area; collaborative computing environments; and a new university bookstore and Duck Shop with a cafe. In addition, it can house administrative offices for as many as 100 employees.

In an effort to restore the building's turn-of-the-century appearance, crews replaced windows that had been bricked over for decades with environmentally friendly, energy-efficient models. A 10,000-gallon stormwater-retention tank controls runoff. On the inside, feats of engineering mastery make the most of natural light, replacing load-bearing walls with steel beams. Where shadows once abounded, light filters through open stairways, giving the interior a fresh, clean look in an energy-efficient manner.

The UO is targeted for LEED gold certification.

The architect is Fletcher Farr Ayotte (FFA) (Portland, Ore.). Venerable Properties (Portland) is the developer.

Start: May 2006
Completion: March 2008
Project area: 103,000 sq. ft.
Cost: $37,654,747

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Eco-friendly icon

Skyline High School, a 1,600-student high school in Ann Arbor, Mich., has been completed in time for the 2008-09 school year.

A prominent feature of the school is a wind turbine at its highest point. Beyond its symbolic impact as a unique, environmentally sound piece, the turbine also is functional. The sinuous, spinning blades connect to a generator, which feeds power to science labs and other locations within the school. At these locations, students will monitor the turbine's energy generation. Visible from the main road and parking areas, the soundless turbine also provides movement on the building's exterior.

The 381,000-square-foot high school is situated on a 110-acre site, but will occupy only 65 acres. A four-story design configuration reduces the building's footprint on the site.

The school's four magnet programs are situated adjacent to a student commons, along with shared forum spaces and decentralized administrative offices (one for each magnet program).

Skyline High School, Ann Arbor, Mich.

The school is registered with the United States Green Building Council, and the team plans to apply for LEED certification.

TMP Associates, Inc. (Bloomfield Hills, Mich.), along with Mitchell and Mouat (Ann Arbor, Mich.) are the architects for the new school. ■

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Washrooms

Schools and universities must ensure that their washrooms are accessible to people with disabilities.

At one time or another, nearly every student has experienced the sudden need for a school washroom. Having an available and accessible washroom is important for all students, including those with disabilities.

The requirements of the Americans with Disabilities Act (ADA) for public entities state that individuals with disabilities should not be excluded from services, programs and activities because existing buildings are inaccessible. To help managers of schools and other facilities update their buildings to comply with the ADA, the federal government has compiled a "Checklist for Readily Achievable Barrier Removal."

Some of the questions education officials should ask regarding their washrooms:

•Is at least one washroom (either one for each sex, or unisex) fully accessible?

•Are there signs at inaccessible washrooms that give directions to accessible ones?

•Is there tactile signage identifying washrooms?

•Are pictograms or symbols used to identify washrooms and, if used, are raised characters and Braille included below them?

•Is the doorway at least 32 inches clear?

•Are doors equipped with accessible handles (operable with a closed fist), 48 inches high or less?

•Can doors be opened easily (5 pounds maximum force)?

•Does the entry configuration provide adequate maneuvering space for a person using a wheelchair? A person in a wheelchair needs 36 inches of clear width for forward movement, and a 5-foot diameter or T-shaped clear space to make turns. A minimum distance of 48 inches clear of the door swing is needed between the two doors of an entry vestibule.

•Is there a 36-inch-wide path to all fixtures?

•Is the stall door operable with a closed fist, inside and out?

•Is there a wheelchair-accessible stall that has an area of at least 5 feet by 5 feet, clear of the door swing, or is there a stall that is less accessible but that provides greater access than a typical stall (either 36 by 69 inches or 48 by 69 inches)?

•In the accessible stall, are there grab bars behind and on the side wall nearest to the toilet?

•Is the toilet seat 17 to 19 inches high (for ages older than 12)? (For ages 5 to 8, the recommended height is 12 to 15 inches; for ages 9 to 12, the recommended height is 15 to 17 inches.)

•Can the faucet be operated with one closed fist?

•Are soap and other dispensers and hand dryers within reach ranges and usable with one closed fist?

•Is the mirror mounted with the bottom edge of the reflecting surface 40 inches high or lower? If mirrors are to be used by both ambulatory people and wheelchair users, then they must be at least 74 inches high at their topmost edge.

Detailed guidelines for complying with the ADA can be found online at www.access-board.gov/adaag/html/adaag.htm. ■
–Mike Kennedy

NOTABLE

14 In inches, the height above the floor at which to install toilet paper dispensers for use by children ages 3 and 4.

14 to 17 In inches, the height above the floor at which to install toilet paper dispensers for use by children ages 5 to 8.

17 to 19 In inches, the specified height above the floor at which to install toilet paper dispensers for use by children ages 9 to 12.

Source: ADA Accessibility Guidelines for Buildings and Facilities (ADAAG)

By Mike Kennedy

Those who keep track of school enrollment trends won't be surprised to learn that the Clark County (Nev.) district reported another sizable increase from 2005-06 to 2006-07. It surpassed 305,000 students—12,000 more than the previous year.

But what might surprise people is that in 2006-07, Clark County was the only one of the nation's 13 largest school systems to report an enrollment increase of any kind.

The downward enrollment trend shown in this year's *AS&U* 100—a compilation of the nation's 100 largest school districts—is unmistakable. Added together, the 100 largest districts had 10,708,137 students in 2006-07, compared with 10,763,959 in 2005-06. Even districts that showed steady growth throughout the 1990s and the early part of this decade are dealing with stagnant or declining enrollment.

Twenty of the top 25, 33 of the top 50, and 57 of the top 100 districts reported fewer students in 2006-07 than the year before. On a percentage basis, the systems with the most significant enrollment decline were Detroit, whose numbers dropped by 10.60 percent, and Cleveland, which fell by 11.44 percent.

Two growing districts cracked the ranks of the 100 largest in 2006-07. The Loudoun County (Va.) district on the outskirts of Washington, D.C., was the 85th-largest district with 50,416 students. The Lewisville (Texas) district joined the list as the 95th-largest district with 47,317 students. Dropping off the list were the Oakland (Calif.) and Alief (Texas) districts.

Ten-year enrollment patterns show greater fluctuations in the list. Districts that were among the 100 largest in 2006-07 that have dropped off the list: St. Paul, Minn.; Indianapolis; St. Louis; Newark, N.J.; Escambia County, Fla.; Shelby County, Tenn.; Ysleta, Texas; Seattle; Buffalo, N.Y.; Minneapolis; Caddo Parish, La.; Cincinnati; Oakland, Calif.; Portland, Ore.; Jefferson Parish, La., and Orleans Parish, La. Of districts on the 2006-07 list, Detroit experienced the greatest 10-year decline: a loss of 65,000 students, or 35 percent.

The fastest growers from 1996 to 2006 were Loudoun County and Douglas County, Colo., each of which more than doubled. Clark County's 70 percent increase over 10 years represents an additional 126,000 students.

The 100 largest districts in 2006-07 had an overall population in 2005 of more than 70.2 million, according to U.S. Census Bureau estimates. On average, school district enrollment accounted for 15.25 percent of the overall population, ranging from a high of 32.23 percent in the Katy (Texas) district to a low of 7.58 percent in the San Francisco district.

In addition to Clark County, larger districts that bucked the no-growth trend in 2006-07 included Gwinnett County, Ga., which added more than 7,000 students and became the 16th district with more than 150,000 students. In North Carolina, the Wake County and Charlotte-Mecklenburg County districts each added more than 7,000 students.

With the addition of Lewisville and the subtraction of the Alief district, Texas still has 18 districts on the list, the most of any state. Florida, with countywide districts, has 14 districts among the 100 largest, but of the seven in the state with enrollments greater than 100,000, every one lost enrollment in 2006-07. Of the 13 districts from California on the list, 10 reported fewer students in 2006-07.

In higher education, the online behemoth University of Phoenix, without the facility constraints that can put a ceiling on quick growth, continues to hold the top spot as the institution with the most students. In 2006-07, it had 224,880 students enrolled, an increase of 91 percent from the previous year.

The *AS&U* 100 has been published every September since 2002, and most years the enrollment data has come from the U.S. Department of Education's National Center for Education Statistics (2006). However, the center reports that its compilation of 2006-07 data has been delayed because of several factors.

In its place, the chart published with this article uses enrollment data for 2006-07 and 2005-06 that was collected from education departments in the various states or from individual districts. In general, the enrollment numbers generated at the state and local level are close, but not identical, to the ones that eventually will come from the federal government.

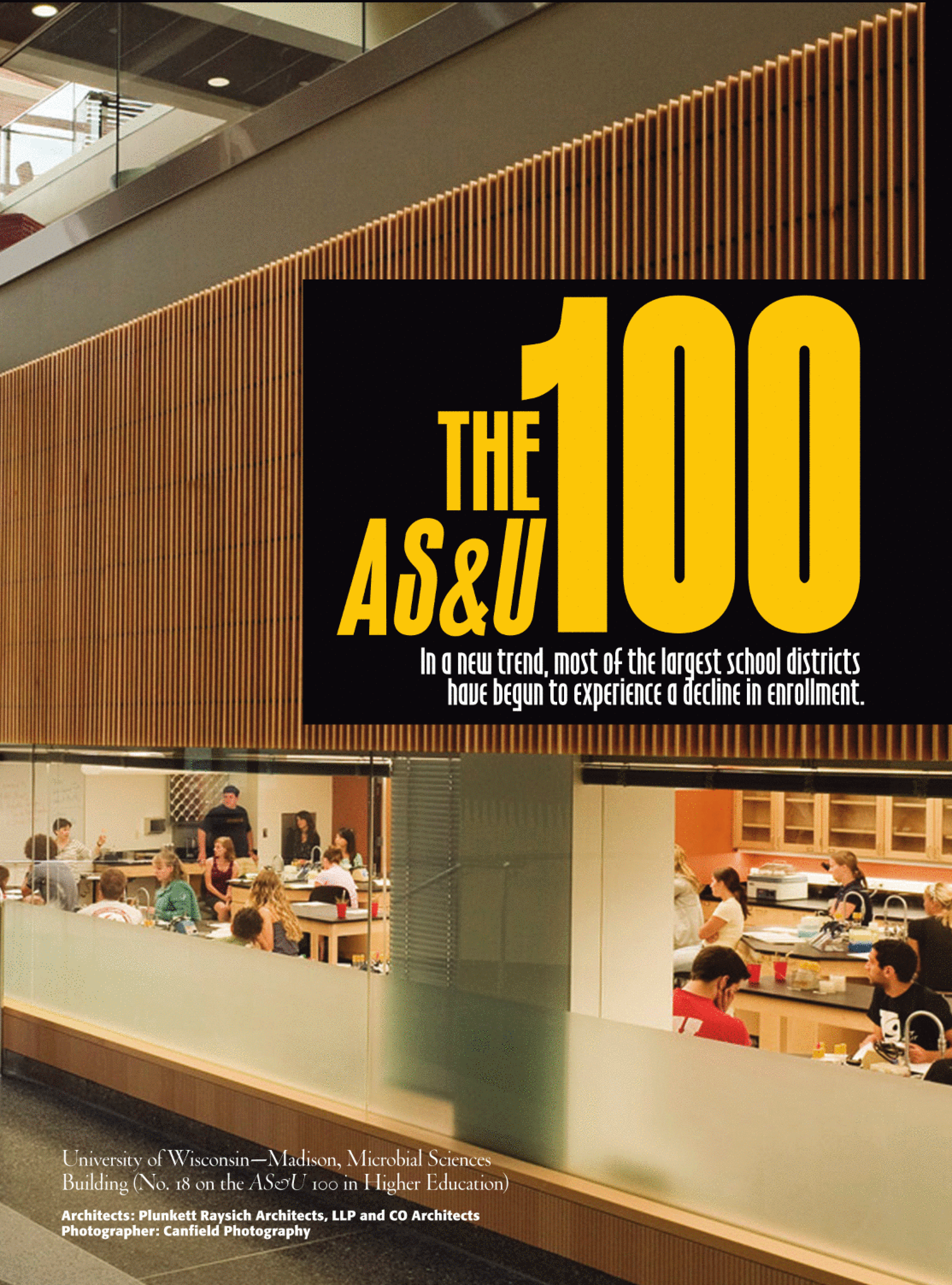
Enrollment data from the 1990s and 1980s come from the NCES, as do the 2006-07 higher-education enrollment numbers. The per-pupil expenditure figures and population estimates come from U.S. Census Bureau reports.

Kennedy, staff writer, can be reached at mkennedy@asumag.com.

CONTINUED...

THE *AS&U* 100

In a new trend, most of the largest school districts have begun to experience a decline in enrollment.



University of Wisconsin—Madison, Microbial Sciences Building (No. 18 on the *AS&U* 100 in Higher Education)

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THE AS&U 100

Rank	School District	State	District population estimate 2005	Enroll. 2006-07	% of population enrolled in public school 2006-07	Per-pupil spending 2005-06	Enroll. 2005-06	1-yr % change	Enroll. 1996-97	10-yr % change	Enroll. 1986-87	20-yr % change
1	New York City	NY	8,213,839	1,003,090	12.21%	$14,961	1,012,033	-0.88%	1,063,561	-5.69%	938,473	6.44%
2	Los Angeles	CA	4,614,590	707,626	15.33%	$9,570	727,319	-2.71%	667,305	6.04%	589,099	16.75%
3	Chicago	IL	2,856,872	401,738	14.06%	$9,282	410,874	-2.22%	469,098	-14.36%	431,298	-7.36%
4	Miami	FL	2,377,725	353,783	14.88%	$8,502	362,033	-2.28%	341,117	3.71%	243,537	31.16%
5	Clark County	NV	1,709,364	305,967	17.90%	$7,092	293,781	4.15%	179,106	70.83%	95,145	68.90%
6	Broward County	FL	1,782,016	262,726	14.74%	$7,791	271,470	-3.22%	218,608	20.18%	131,726	49.86%
7	Houston	TX	1,394,432	202,499	14.52%	$7,472	209,879	-3.52%	209,375	-3.28%	194,389	4.00%
8	Hillsborough County	FL	1,131,542	193,480	17.10%	$7,068	193,669	-0.10%	147,826	30.88%	115,342	40.39%
9	Hawaii	HI	1,273,278	179,234	14.08%	$9,640	181,355	-1.17%	187,653	-4.49%	161,302	10.00%
10	Philadelphia	PA	1,456,350	177,431	12.18%	$8,958	184,560	-3.86%	212,150	-16.37%	197,843	-11.50%
11	Orange County	FL	1,021,884	175,155	17.14%	$7,388	175,307	-0.09%	129,143	35.63%	84,125	51.97%
12	Palm Beach County	FL	1,264,956	171,429	13.55%	$8,345	174,911	-1.99%	137,585	24.60%	84,680	50.60%
13	Fairfax County	VA	1,010,015	163,962	16.23%	$11,909	163,768	0.12%	143,266	14.45%	126,183	23.04%
14	Dallas	TX	1,025,989	158,814	15.48%	$7,821	160,969	-1.34%	154,847	2.56%	132,389	16.64%
15	Gwinnett County	GA	713,678	151,421	21.22%	$8,334	143,980	5.17%	88,855	70.41%	50,906	66.38%
16	Montgomery County	MD	927,405	137,814	14.86%	$12,859	139,398	-1.14%	122,505	12.50%	94,457	31.46%
17	San Diego	CA	1,029,159	131,034	12.73%	$9,003	132,482	-1.09%	133,687	-1.98%	115,441	11.90%
18	Prince George's County	MD	842,764	131,014	15.55%	$10,221	133,325	-1.73%	125,198	4.65%	103,301	21.15%
19	Charlotte-Mecklenburg	NC	796,369	129,009	16.20%	$7,723	123,789	4.22%	93,533	37.93%	73,360	43.14%
20	Wake County	NC	750,865	128,072	17.06%	$7,333	120,504	6.28%	85,735	49.38%	58,202	54.56%
21	Duval County	FL	826,791	125,171	15.14%	$7,633	126,535	-1.08%	126,118	-0.75%	102,966	17.74%
22	Memphis	TN	689,239	123,972	17.99%	$7,719	125,553	-1.26%	111,156	11.53%	108,300	12.64%
23	Detroit	MI	918,852	117,568	12.80%	$10,576	131,639	-10.69%	182,316	-35.51%	189,269	-60.99%
24	Pinellas County	FL	926,810	109,880	11.86%	$7,870	112,127	-2.00%	107,060	2.63%	88,934	19.06%
25	Cobb County	GA	597,783	106,103	17.75%	$8,061	105,526	0.55%	86,765	22.29%	62,357	41.23%
26	Baltimore County	MD	783,405	105,839	13.51%	$10,327	107,043	-1.12%	104,073	1.70%	80,259	24.17%
27	DeKalb County	GA	662,145	98,713	14.91%	$9,965	99,544	-0.83%	90,311	9.30%	73,040	26.01%
28	Jefferson County	KY	696,703	97,915	14.05%	$8,741	97,518	0.41%	91,878	6.57%	92,940	5.08%
29	Albuquerque	NM	609,255	95,256	15.63%	$7,486	93,690	1.67%	89,092	6.92%	79,922	16.10%
30	Polk County	FL	541,910	92,873	17.14%	$7,891	89,483	3.79%	74,808	24.15%	59,352	36.09%
31	Cypress-Fairbanks	TX	326,811	91,889	28.12%	$6,635	86,100	6.72%	52,930	73.60%	33,104	63.97%
32	Long Beach	CA	529,521	90,663	17.12%	$8,100	93,589	-3.13%	83,038	9.18%	65,052	28.25%
33	Milwaukee	WI	583,372	89,912	15.41%	$11,277	92,395	-2.69%	101,007	-10.98%	90,657	-0.83%
34	Jefferson County	CO	526,719	86,154	16.36%	$8,313	86,339	-0.21%	86,670	-0.60%	75,745	12.08%
35	Baltimore City	MD	636,377	82,381	12.95%	$10,910	85,468	-3.61%	108,759	-24.25%	111,243	-35.03%
36	Fulton County	GA	491,667	81,982	16.67%	$9,138	79,192	3.52%	59,953	36.74%	38,855	52.61%
37	Austin	TX	626,993	81,917	13.07%	$8,141	81,003	1.13%	76,054	7.71%	60,891	25.67%

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38	Northside (San Antonio)	TX	383,504	81,861	21.35%	$6,833	78,154	4.74%	59,284	38.08%	44,776	45.30%
39	Fort Worth	TX	506,365	79,369	15.67%	$7,679	80,208	-1.05%	75,813	4.69%	68,045	14.27%
40	Lee County	FL	544,196	78,980	14.51%	$7,399	75,579	4.50%	52,317	50.96%	35,309	55.29%
41	Jordan	UT	348,724	78,708	22.57%	$4,960	77,369	1.73%	72,748	8.19%	61,022	22.47%
42	Nashville	TN	574,395	78,607	13.69%	$8,303	79,297	-0.87%	69,888	12.48%	66,528	15.37%
43	Fresno	CA	400,964	77,555	19.34%	$8,049	79,046	-1.89%	78,470	-1.17%	58,969	23.96%
44	Brevard County	FL	528,640	74,791	14.15%	$7,297	75,160	-0.49%	66,663	12.19%	48,154	35.62%
45	Mesa	AZ	518,263	74,068	14.29%	$6,497	74,626	-0.75%	70,181	5.54%	56,018	24.37%
46	Anne Arundel County	MD	509,397	73,066	14.34%	$10,064	73,565	-0.68%	72,322	1.03%	64,006	12.40%
47	Denver	CO	558,663	72,561	12.99%	$9,728	72,312	0.34%	66,331	9.39%	60,315	16.88%
48	Virginia Beach	VA	437,021	72,543	16.60%	$8,839	74,313	-2.38%	76,677	-5.39%	55,989	22.82%
49	Prince William County	VA	340,568	70,948	20.83%	$9,253	68,462	3.63%	48,333	46.79%	37,600	47.00%
50	Guilford County	NC	443,539	70,380	15.87%	$7,632	68,797	2.30%	58,736	19.82%	23,925	66.01%
51	Granite	UT	368,677	68,483	18.58%	$5,202	69,048	-0.82%	76,456	-10.43%	68,203	0.41%
52	Fort Bend	TX	308,773	66,792	21.63%	$6,638	65,927	1.31%	46,881	42.47%	27,294	59.14%
53	Seminole County	FL	401,291	66,349	16.53%	$7,059	67,473	-1.67%	55,972	18.54%	41,626	37.26%
54	Greenville	SC	421,355	66,237	15.72%	$6,929	64,315	2.99%	55,893	18.51%	50,590	23.62%
55	Volusia County	FL	487,875	65,967	13.52%	$7,628	65,599	0.56%	58,004	13.73%	40,169	39.11%
56	Washoe County	NV	389,775	65,013	16.68%	$7,286	64,125	1.38%	49,671	30.89%	33,705	48.16%

Feeding the beast

The three largest school districts in the nation's largest state all experienced enrollment declines in 2006-07. The numbers are smaller, but there still are plenty of students. Together, the Los Angeles, San Diego and Long Beach districts accounted for more than 929,000 students, and providing adequate facilities for them is a pricey proposition.

The three California systems have something else in common: In November, each of them will be asking voters to approve bond issues in excess of $1 billion.

In the Los Angeles Unified School District, billion-dollar bond proposals have become old-hat. Voters approved four ballot questions in eight years: a $2.4 billion package in November 1997; a $3.35 billion package in November 2002; a $3.8 billion request in March 2004; and a $3.985 billion proposal in November 2005.

But district officials say it still has $60 billion in capital-improvement needs. So they are going back to voters to seek approval of a $7 billion package. District officials say the bonds would enable the district to address repair and safety needs, improve technology, create smaller schools, and incorporate more green approaches into facilities management.

In San Diego, voters will determine the fate of a $2.1 billion proposal. The measure comes 10 years after district voters approved a $1.51 billion bond package. That program paid for repairs at 161 schools, construction of 12 new schools and the rebuilding of three schools.

The bond this fall seeks funds to repair outdated student restrooms, plumbing and roofs; upgrade classroom technology; improve school safety and security; replace outdated portable classrooms; and make other improvements.

The Long Beach Unified District decided to put a $1.2 billion proposal on the Nov. 4 ballot after a comprehensive facilities study. The analysis determined that major renovations are needed at 38 percent of schools, and moderate renovations at 36 percent. Eighty percent of the school district's buildings were constructed before 1970.

The bonds would enable Long Beach to retrofit schools for earthquake safety and handicap accessibility; improve energy efficiency; reduce crowding; and make other improvements.

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57	Pasco County	FL	430,053	64,688	15.04%	$7,266	62,768	3.06%	43,461	48.84%	29,347	54.63%
58	Mobile	AL	399,851	64,178	16.05%	$7,590	64,721	-0.84%	64,833	-1.01%	67,824	-5.68%
59	Davis	UT	268,084	62,832	23.44%	$5,266	62,456	0.60%	59,220	6.10%	49,061	21.92%
60	Arlington	TX	366,229	62,830	17.16%	$6,833	63,308	-0.76%	53,343	17.78%	40,620	35.35%
61	El Paso	TX	327,028	62,635	19.15%	$7,582	63,674	-1.63%	64,444	-2.81%	61,616	1.63%
62	Elk Grove	CA	233,683	61,881	26.48%	$7,652	60,735	1.89%	37,787	63.76%	18,222	70.55%
63	North East (San Antonio)	TX	344,086	61,003	17.73%	$7,340	59,556	2.43%	45,184	35.01%	38,062	37.61%
64	Tucson	AZ	486,891	60,411	12.41%	$7,410	60,557	-0.24%	62,867	-3.91%	55,235	8.57%
65	Aldine	TX	242,684	58,596	24.14%	$7,680	57,931	1.15%	47,242	24.03%	38,107	34.97%
66	Chesterfield County	VA	288,243	58,455	20.28%	$7,655	57,239	2.12%	49,781	17.42%	38,776	33.67%
67	Washington, D.C.	DC	582,049	57,741	9.92%	$13,446	59,616	-3.15%	78,648	-26.58%	85,612	-48.27%
68	San Bernardino	CA	257,911	57,397	22.25%	$8,386	58,661	-2.15%	46,309	23.94%	33,454	41.71%
69	Santa Ana	CA	276,042	57,346	20.77%	$8,069	59,310	-3.31%	52,107	10.05%	37,415	34.76%
70	Knox County	TN	405,355	56,535	13.95%	$6,854	56,851	-0.56%	51,224	10.37%	26,485	53.15%2
71	Garland	TX	257,932	56,459	21.89%	$6,490	56,955	-0.87%	44,869	25.83%	34,288	39.27%
72	Boston	MA	590,987	56,388	9.54%	$17,421	57,349	-1.68%	63,239	-10.83%	60,704	-7.65%
73	San Francisco	CA	741,025	56,183	7.58%	$8,215	56,236	-0.09%	61,174	-8.16%	64,786	-15.31%
74	Alpine	UT	223,538	56,051	25.07%	$4,918	54,773	2.33%	43,719	28.21%	31,153	44.42%
75	San Antonio	TX	344,619	55,322	16.05%	$8,272	56,371	-1.86%	61,361	-9.84%	61,084	-10.42%
76	Columbus	OH	491,744	53,674	10.92%	$11,457	59,141	-9.24%	63,894	-16.00%	66,029	-23.02%
77	Cumberland County	NC	267,740	53,079	19.82%	$7,110	52,439	1.22%	51,035	4.01%	43,783	17.51%

Splitsville, Utah

The Jordan school system, the largest in Utah, is nestled comfortably at No. 41 on the list of the 100 largest districts. But not for long. In a couple of years, it is likely to disappear from the list.

That's because residents on the east side of the district voted last year to pull out and form a separate school system. Proponents of the split argued that too many resources were going to west-side communities and that east-side issues were not given sufficient attention.

The split officially occurs in 2009. The remaining Jordan district will serve the communities of Bluffdale, Herriman, Riverton, South Jordan and West Jordan, and is expected to have a student enrollment of around 45,000. The new, east-side district will serve Cottonwood Heights, Draper, Midvale, Sandy, Alta and unincorporated Salt Lake County, and is expected to have about 35,000 students.

While some 80,000 students continue to fill the classrooms of Jordan's 90-plus schools, the grown-ups are trying to work out the messy details of the break-up. Some things have gone smoothly—the new district has hired an assistant state education commissioner as superintendent, and a new school board has been elected.

But financial issues have yet to be resolved. The split will give the east-side district 43 percent of the students, but it also will have 57 percent of the tax base. The remaining west-side district is expected to grow more than the east-side communities; a feasibility study in 2006 found that over the next five years, the west-side schools would need $585 million for capital facility needs, and the east side would need $194 million.

At the same time, residents in the east-side area expressed resentment that projects promised in a 2003 bond issue for their area were not completed.

Transition teams for each district have negotiated for several months to divide the assets of the existing school system and whether one district needs to reimburse the other to make the split equitable. The teams have been unable to agree on a plan, and the financial questions are headed to arbitration.

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78	Cleveland	OH	457,659	52,769	11.53%	$11,073	59,586	-11.44%	74,026	-28.72%	72,041	-36.52%
79	Plano	TX	384,112	52,753	13.73%	$7,264	53,007	-0.48%	40,864	29.09%	28,101	46.73%
80	Osceola County	FL	231,482	51,881	22.41%	$7,065	49,779	4.22%	27,376	89.51%	13,133	74.69%
81	Clayton County	GA	266,614	51,815	19.43%	$8,461	51,948	-0.26%	41,658	24.38%	32,538	37.20%
82	Capistrano	CA	313,067	51,512	16.45%	$7,108	51,245	0.52%	37,539	37.22%	20,588	60.03%
83	Katy	TX	157,396	50,725	32.23%	$7,087	47,808	6.10%	26,597	90.72%	15,832	68.79%
84	Forsyth County	NC	325,726	50,708	15.57%	$7,762	49,599	2.24%	41,851	21.16%	38,857	23.37%
85	Loudoun County	VA	256,417	50,416	19.66%	$11,484	47,326	6.53%	21,574	133.69%	13,236	73.75%
86	Douglas County	CO	251,464	50,370	20.03%	7,793	48,043	4.84%	24,495	105.63%	9,693	80.76%
87	Corono-Norco	CA	214,754	49,865	23.22%	$7,188	47,510	4.96%	29,528	68.87%	17,558	64.79%
88	Atlanta	GA	474,665	49,773	10.49%	$12,435	49,965	-0.38%	60,064	-17.13%	66,069	-32.74%
89	Cherry Creek	CO	228,185	49,684	21.77%	$7,843	48,661	2.10%	37,128	33.82%	26,459	46.75%
90	Pasadena	TX	231,693	49,630	21.42%	$7,124	49,047	1.19%	40,512	22.51%	35,097	29.28%
91	Sacramento	CA	367,126	49,355	13.44%	$8,878	50,408	-2.09%	51,240	-3.68%	45,893	7.01%
92	Anchorage	AK	275,474	49,230	17.87%	$9,663	49,714	-0.97%	48,109	2.33%	39,175	20.42%
93	East Baton Rouge	LA	380,102	49,145	12.93%	$8,493	49,945	-1.60%	61,499	-20.09%	57,523	-17.05%
94	Howard County	MD	269,174	49,048	18.22%	$11,703	48,596	0.93%	38,857	26.23%	25,629	47.75%
95	Lewisville	TX	256,707	48,890	19.05%	$7,341	47,317	3.32%	30,243	61.66%	16,809	65.62%
96	Garden Grove	CA	283,485	48,798	17.21%	$7,984	49,574	-1.57%	44,661	9.26%	36,395	25.42%
97	Wichita	KS	326,269	48,496	14.86%	$8,600	48,451	0.09%	46,391	4.54%	44,919	7.38%
98	Brownsville	TX	177,978	48,284	27.13%	$7,848	48,186	0.20%	40,494	19.24%	33,966	29.65%
99	San Juan	CA	364,537	47,862	13.13%	$7,824	48,325	-0.96%	47,819	0.09%	45,791	4.33%
100	Henrico County	VA	280,599	47,680	16.99%	$7,624	47,747	-0.14%	38,102	25.14%	30,946	35.10%
	TOTAL		**70,239,889**	**10,708,137**	**15.25%**		**10,763,959**	**-0.52%**			**8,124,238**	**24.13%**

Sources: State departments of education, individual districts, U.S. Census Bureau and National Center for Education Statistics

Raising Arizona State

With more than 51,000 students in fall 2006, Arizona State University's Tempe campus is fifth on the list of largest colleges and universities. Like most large institutions trying to remain competitive and recruit students, Arizona State has many construction projects in the works.

University officials want to boost the number of students living on the four Arizona State campuses to 12,000 by 2015. In Tempe, the school plans to construct 10 buildings on the south end of campus that will accommodate 5,000 students.

The first of those facilities—called Vista Del Sol—opened for the fall semester. Built in partnership with a private developer, the 1,866-bed building has one-, two-, three- and four-bedroom units. Like many university housing projects built in recent years, it offers numerous amenities: a community center, theater, tanning salon, retail plaza, fitness center, swimming pool, game room and flatscreen TVs.

Elsewhere on the Tempe campus, Arizona State is erecting a new home for its honors college. Workers broke ground last year on a $120 million home for Barrett College. The 8.25-acre campus will provide housing for 1,700 students, as well as include a central dining facility. The project will have seven buildings and a total of 510,000 square feet of space—431,000 of that residential.

The new space will have a sustainable living community, with low-consumption plumbing fixtures, enhanced energy monitoring, a green roof and organic garden offering students the opportunity to study and experience sustainable living concepts. Other amenities will include a fitness center, computer lounge and lab, amphitheater, classrooms, outside activity courts and dining hall with covered terrace, a garden and special dining rooms.

Largest in higher education

Rank	Institution	Fall 2006	Fall 2005	1-year % change	Fall 1996	10-year % change
1	University of Phoenix Online Campus	224,880	117,309	91.70%	n/a*	n/a
2	Miami Dade College	54,094	54,169	-0.14%	48,795	10.86%
3	Ohio State University	52,568	50,504	4.09%	48,352	8.72%
4	University of Florida	51,725	46,693	10.78%	39,863	29.76%
5	Arizona State University	51,481	51,612	-0.25%	42,463	21.24%
6	University of Minnesota–Twin Cities	50,883	51,175	-0.57%	51,388	-0.98%
7	University of Texas at Austin	50,170	49,696	0.95%	48,008	4.50%
8	University of Central Florida	48,398	44,856	7.90%	27,684	74.82%
9	Texas A&M University	46,542	44,910	3.63%	41,892	11.10%
10	City College of San Francisco	46,411	43,255	7.30%	26,933	72.32%
11	Michigan State University	46,045	45,166	1.95%	41,545	10.83%
12	University of South Florida	44,870	42,660	5.18%	36,266	23.72%
13	Houston Community College	43,518	39,516	10.13%	38,493	13.05%
14	Pennsylvania State University	43,252	40,709	6.25%	39,855	8.52%
15	University of Illinois at Urbana–Champaign	42,326	41,938	0.93%	38,841	8.97%
16	University of Michigan–Ann Arbor	41,942	39,993	4.87%	36,525	14.83%
17	New York University	41,783	40,004	4.45%	36,305	15.09%
18	University of Wisconsin–Madison	41,563	40,793	1.89%	39,289	5.79%
19	Northern Virginia Community College	41,266	37,740	9.34%	35,337	16.78%
20	Florida State University	40,555	39,146	3.60%	30,154	34.49%

*Was not among the largest 120 campuses in 1996 — Source: National Center for Education Statistics, College Navigator

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Height-adjustable seating has become more affordable and is being used on a larger scale in schools and universities. (Portland Community College, Portland, Ore.; Architect: Yost Grube Hall Architecture)
Photo courtesy of Pete Eckert

Money on Your Mind

Despite spending constraints, schools and universities can find creative ways to finance quality furniture purchases.

By Julie Hall

In today's economic climate, Americans must find creative ways to do more with less. School and university administrators are challenged with stretching budgets to compensate for the increased costs of construction, maintenance and operations. Funding is likely to remain a struggle as it becomes increasingly difficult to convince taxpayers in some regions to pass needed bonds, and tax revenue growth slows.

Furniture is a tempting place to save money. It is one of the last things put in place in a construction project, and when money gets tight, it may seem like an easy solution is to skimp on quality in favor of what is affordable. This scenario is bad news for the middle school student

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who is taller than normal for his age and must cram his legs to fit under a desk that is too low for his build, or for the college student that must sit in an uncomfortable seat with metal legs for a 90-minute biology lecture.

To create a proper learning environment, furniture should be durable, flexible, aesthetic, maintainable, comfortable and affordable. And thanks to many education furniture manufacturers, the goal of purchasing furniture with these characteristics is becoming more attainable.

A changing price point

Once upon a time, furniture purchasing may have been as simple as flipping through a catalog, finding something that matched the needs of a given space, and paying what was on the price tag. That process has changed, however, and school and university administrators now have more bargaining power.

"What's really changing is the price point, and the manufacturers have really realized the market that [education institutions] provide," says Debbi Moody, senior associate and interior designer with Yost Grube Hall Architecture in Portland, Ore.

Updating yesterday's designs from the 1960s and '70s to be more ergonomic and accessible has made education furniture a large market, says Moody.

"There's been a lot of energy put into producing a good, quality product at a good price point that makes it affordable," she says.

The declining cost of innovative furniture systems is opening doors that previously had been locked for many education institutions. More schools and universities are finding it feasible to consider more than just stationary furniture in a one-size-fits-all solution.

Instead, they are seeing the advantages of selecting furniture that is adjustable for the individual student. Their shopping criteria might include

Saving green

Cost efficiency and sustainability sometimes go hand-in-hand. Education institutions should keep an eye out for opportunities to purchase used furniture or refurbish old furniture instead of buying new. This can help budgets stretch, as well as help schools and universities earn points toward LEED certification.

Portland Community College, Portland, Ore., took advantage of such an opportunity when it was looking for furnishings for instruction and office space in a seven-building remodel and new construction on one of its campuses. The construction budget only allowed for new furniture purchases for the new construction, leaving little to work with for the remodeled spaces.

A local company that had just gone out of business offered used systems furniture that was a few years old to the college. By purchasing the used product, Portland Community College was able to replace all of the office furnishings on the entire campus—including the new construction and the remodel. By doing this, the college even was able to reupholster some of the furniture panels and still stay well under budget.

By keeping their minds open to creative ways to save, school and university administrators can learn of these types of opportunities and capitalize on them. They can seek out furniture dealerships that might be able to offer used furniture. Through a Web search or word-of-mouth, they might be able to happen upon some deals that fit their needs. They even may be able to seek out organizations that are willing to donate furniture to improve the learning environments of local schools or universities.

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Updating designs to be more accessible and ergonomic has caused a spike in the education furniture market. (Washington State University, Pullman; Architect: Yost Grube Hall Architecture) Photo courtesy of Pete Eckert

seats that are large enough for a variety of sizes and in materials such as mesh that may be more comfortable for students, while also being easier to maintain.

A changing price point has made it possible for schools and universities to use height-adjustable chairs on a larger scale, says Moody.

In computer labs, this type of chair can be adjusted to enable students to use keyboards in a more ergonomic fashion.

With the amount of time students spend in their learning environments, it is worth an education institution's time and effort to select the best furniture solution possible. If the price tag boasts a cost that is too high, other options do exist—as long as those in charge of purchasing don't mind a little bargain shopping.

Deal or no deal?

In the past, quality furniture came at a cost, and those that opted to save money upfront often got what they paid for in the end. Although there still is a price to quality, it is not as clear-cut as it may have been at one time. Education institutions looking to purchase furniture have buying power, as more manufacturers make their way into the market and compete for the same business.

When looking for the best price, purchasers should research all of their options. Many companies that traditionally have produced furniture for the workplace now are developing furniture systems for education, says Steve McCollom, associate partner with Gary Lee Partners, an architecture and design firm with offices in Chicago, New York and San Francisco.

These untraditional suppliers might have a more affordable alternative to traditional education furniture suppliers. This means schools and universities could gain quality furniture through an untraditional source at a more affordable price, or use that price to bargain for a similar deal with a more traditional supplier.

Another advantage to shopping around is finding variety. Some companies that haven't traditionally produced furniture for education may be able to offer more of a design edge.

Universities, particularly, are seeking sophisticated designs that are more "sexy," says McCollom. Higher-education institutions are in heated competition with one another, and as a result, more colleges and universities are placing a greater value on the power of a first impression. By shopping around and seeing what different furniture manufacturers have to offer, purchasers may be able to find unique, personal solutions at reasonable prices.

The big bang

More manufacturers supplying more options means more bargaining power—but not just concerning costs. Some manufacturers offer value-added services along with furniture purchases that include space planning and floor layout. This could help schools that aren't working directly with an architect.

"You've got to shop and competitively shop, compare pricing and really look for what we call 'best value,' which is not necessarily the lowest bid, the lowest price, but a combination of things—quality, delivery, service, follow up—all of those things add to the best value equation," says John R. Miller, CPPO, director of purchasing at Harford County Public Schools, Bel Air, Md.

Many manufacturers are willing to work with schools and universities that will be making large purchases. Education institutions should express

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Source: USGBC

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When making large furniture purchases, education institutions can negotiate discounts with manufacturers. (Oregon State University, Portland; Architect: Yost Grube Hall Architecture)
Photo courtesy of Pete Eckert

their needs to manufacturers and see if they can get a discount for large purchases, says Moody.

"What they need to do is start talking to the manufacturers and suppliers, 'Say over the next 18 months, this is what we anticipate in the volume of furnishings we're going to buy; therefore, we'd like you to price it based on this volume of furniture,' because the more volume you give them, the better the cost is."

Smart spending

Aside from wheeling and dealing, education institutions can explore different funding avenues that may allow them to make purchases at a more affordable price. Many schools and universities use third-party purchasing agents and cooperatives, which establish contracts with participating manufacturers and then allow schools and universities to buy through them at special rates.

Harford County Public School's purchasing department uses cooperatives whenever they are determined to be in the schools' best interest, says Miller.

"... If we feel we need to go out to competitive bid, then we'll do that as well," he says. "It's circumstantial really."

Local and state governments also can partner with furniture manufacturers to come up with purchase agreements, and then open up their contracts to education institutions.

Schools and universities can research these options through their state's Department of Administrative Services or the department responsible for purchasing in their state. ■

Hall, associate editor, can be reached at jhall@asumag.com.

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The Marv Nelson Science and Learning Center at Green River Community College, Auburn, Wash., took the old energy-intensive science lab concept and turned it sideways, creating a vertical laboratory arrangement that serves as a sustainable teaching tool. Photo courtesy of Steve Keating

Good Stewards

High-performance facilities reduce operating costs, improve learning, benefit the environment, and provide a good example for the next generation.

By Jim French and Rod Oathout

Education institutions perpetually are challenged to deliver high-quality education with limited budgets. Part of an institution's success depends on finding creative solutions to reduce building operational costs and still provide an environment that promotes learning. With the recent spikes in energy costs and increased focus on environmental stewardship, maximizing energy performance has become a necessity when planning a new facility or improving an existing one.

Integrated design

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efficiency start at the earliest conceptual stage with defined goals for performance. Educating administrators about integrated design and sustainability concepts results in informed decisions early in the design process. An integrated team of planners, architects and engineers can proactively consider energy performance as they develop a design.

Once energy consumption is optimized through design of the building envelope, the next step is to select highly efficient systems and materials that further reduce the building's carbon footprint. Energy modeling and life-cycle costing are essential in the design process to ensure the systems make fiscal sense.

Benchmarking tools such as Energy Star and ASHRAE 90.1 commonly are used to judge the energy performance of a building. Designs should strive to obtain an Energy Star rating and exceed 30 percent energy savings over the ASHRAE 90.1 baseline. In a recent study by the U.S. Green Building Council, sustainable schools used 33.4 percent less energy than comparable conventional schools, which saves an average of $47,880 annually in utility costs. Similarly, high-performing Energy Star schools have been shown to cost 40 cents less per square foot to operate.

Betty Fairfax High School, Phoenix, is oriented to enhance daylight harvesting and minimize thermal heat gain. The daylighting strategy is enhanced by insulated, low-E windows and occupancy sensors for the artificial lighting. Photo courtesy of Mark Boisclair

Laying the groundwork

When analyzing a site and developing a design concept for a school, designers should consider the building's orientation and envelope. Each of these can affect energy consumption greatly. Thoughtful, creative site design that maximizes the landscape's potential provides opportunities to reduce energy use and site-development costs. Orienting the building to minimize southwest and southeast exposures reduces the cooling and heating load for building systems.

Several issues influence the sustainability of a site. These include limiting the development footprint and reducing the heat-island effect. Maintaining existing trees provides shading and protection from prevailing winds, and designing with the slope of the land protects portions of the building from the elements. Using highly reflective pavement, and distributed walkways and parking areas also help reduce heat absorption and the heat-island effect.

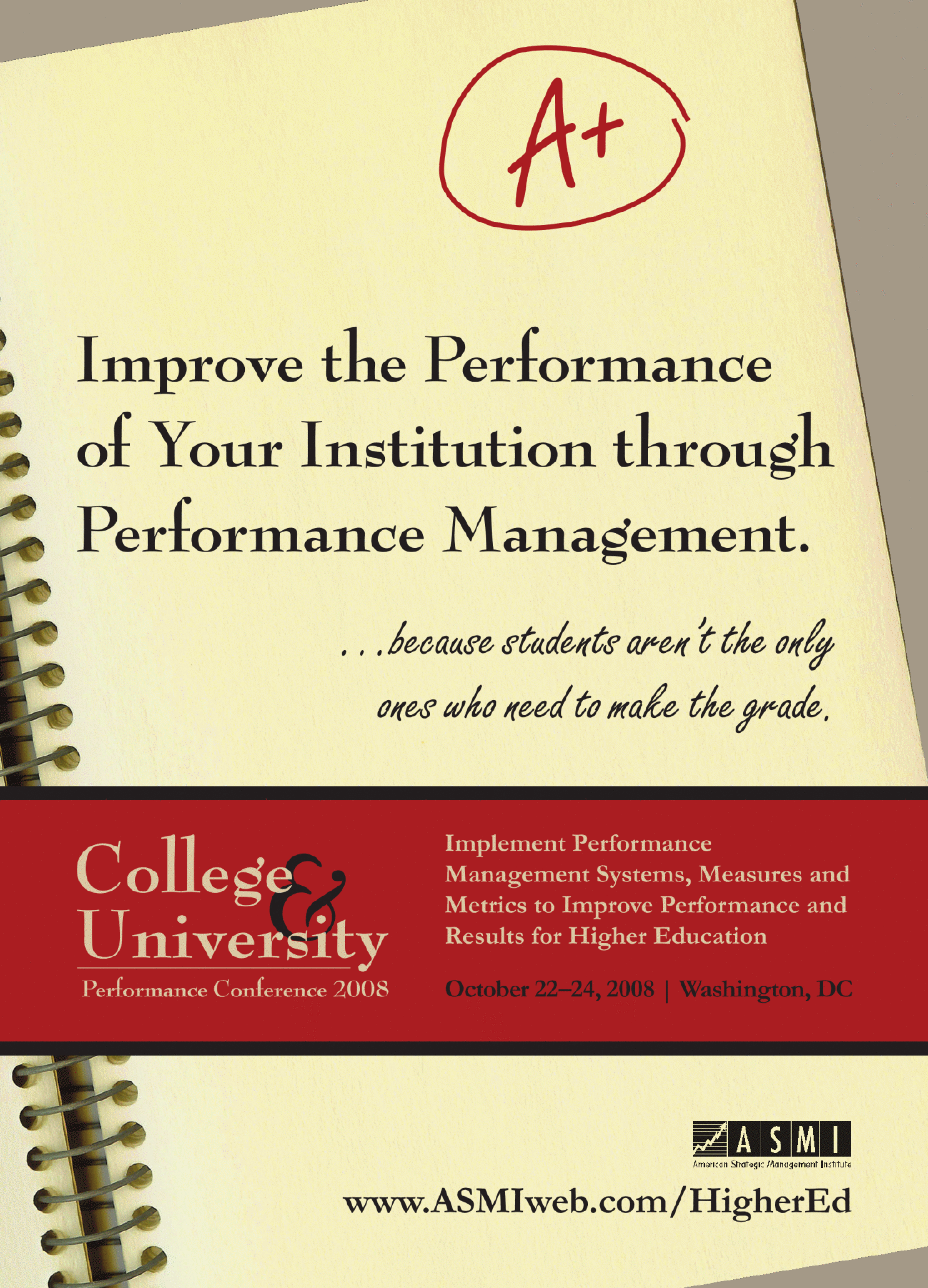
It's all about the package

The building envelope functions as one system related to energy usage. The key to maximizing efficiency is an integrated team designing all of the elements together.

The goal for the building envelope is to provide a lasting image that reflects the character of the school while enhancing energy efficiency. Durability, maintainability and student comfort (visual, thermal and acoustic) need to be factored into design decisions. Schools should consider performance criteria when selecting building envelope materials, including the roof, windows, walls and floors.

The ideal materials for energy performance vary widely based on climate, but some generalizations can be made. High-mass materials such as brick and concrete block are effective for exterior walls in much of the United States because they store heat in colder months and temper heat transfer in warmer climates. Highly reflective roofing materials and light-colored walls with a high R-value reflect solar energy and are the best choice in all but the coldest climates. The International Energy Conservation Code is one source that defines the minimum thermal performance for the building envelope.

Determining the appropriate amount and type of windows in the building-envelope design is a balancing act. Daylighting in schools can improve student learning and reduce electricity costs, but too much natural light can reduce energy efficiency. The quality of natural light is more important than the quantity. Inappropriately designed daylighting increases the heat gain of a space. This can offset any energy savings from natural lighting. Excessive daylighting can cause glare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Rose Hill Elementary School, Kirkland, Wash., uses 25 percent of the energy of comparable schools in the district by using small, high-efficiency gas furnaces and a block exterior.
Photo courtesy of Chris J. Roberts

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33.4 Percentage of energy saved with sustainable schools vs. comparable conventional schools.

Source: USGBC

and difficulty in viewing electronic media, so schools should include a shading plan in their designs.

Effective daylighting that improves energy performance is achieved through careful placement of insulated, low-emissivity windows and walls with a high R-value, combined with appropriate shading devices and automatic artificial light-level controls. Lighting systems should be designed for each specific space to avoid overlighting any area and with the approach that artificial lighting supplements the available natural light.

A comforting system

The HVAC system is one of the largest energy consumers in a school and is important for maintaining student comfort year-round. Even small improvements in the performance of an HVAC system can save energy significantly. The climate, building size, utility rates and maintenance capabilities are the primary factors to consider in a life-cycle analysis of an HVAC system.

A geothermal heating and cooling system is considered the most energy-efficient method of mechanically maintaining thermal comfort in a building. These systems use the relatively stable earth temperature to heat or cool a building by circulating water through a continuous loop of buried pipes. A geothermal system is a good choice for a school if the site and sub-soil conditions can accommodate the geothermal wells.

Many other systems and system hybrids can produce similar energy-performance results, including variable refrigerant systems, which are beginning to develop a track record in the United States.

HVAC systems that conserve energy, but do not provide the desired indoor environment, are counterproductive. The first step in selecting an appropriate system is defining important environmental criteria such as temperature, humidity and microscopic consideration. Oversized systems add unnecessary cost to the project, and often struggle to maintain the desired indoor environment and energy performance. Displacement ventilation systems affect the indoor air quality positively and enable schools to minimize the capacity of the mechanical system.

Automated controls for the HVAC system and lighting (either with infrared or ultrasonic sensors) enable the systems to work efficiently and turn off when not in use. Building commissioning is a good way to verify that the equipment installed is operating correctly. Budgetary constraints, and a school staff's ability to operate and maintain a system are important factors in determining which system will work best.

Additional renewable-energy options include active and passive solar systems, as well as wind turbines. These once were viewed as cost-prohibitive for use in schools; now, the technology has become more affordable, and grants can offset the higher initial cost. A school that uses these systems can incorporate curriculum focused on solar and wind technologies to provide students with real-world learning opportunities.

Existing facilities

When modernizing existing facilities, institutions can improve indoor environmental quality and energy efficiency most dramatically by replacing roofs, windows, and HVAC and lighting systems. Adding or modernizing a building-automation system often improves the indoor environment and has an attractive life-cycle cost.

Many unique circumstances affect this evaluation, so specific trends are difficult to quantify. Schools should improve the building envelope at the same time they upgrade HVAC or building-automation systems so that the energy does not escape to the outdoors. ■

French is a senior principal and the K-12 education leader for DLR Group, a design firm with 15 offices nationwide. Rod Oathout, LEED AP, is a principal and mechanical engineer with the firm. They work in the Overland Park, Kan., office and can be reached at (913)897-7811, jfrench@dlrgroup.com or roathout@dlrgroup.com.

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The latest technology and equipment can help prevent security breaches in education institutions. Photo courtesy of Videx

Safe Entry, Easy Exit

Bolstering security at campus doors is critical for schools and universities.

By Mike Kennedy

After violent episodes too numerous to list and too terrible to forget, schools and universities have been focused for several years on enhancing security in their facilities.

Doors are among the most critical points of concern for school personnel responsible for keeping buildings safe. Education institutions want doors that let the right people in and keep the wrong people out. Well-designed, properly secured doors supplemented by equipment that wards off intruders, controls access and prevents damage can help educators provide a safe environment that is conducive to learning.

Ins and outs

The paradox of door safety for

schools and universities is that the doors should be designed and built so that it's hard for people to get in, yet easy for them to get out.

In a publication released earlier this year, "Door Locking Options in Schools," the National Clearinghouse for Educational Facilities spells out the characteristics that ensure a door will control who and what gets into a school building. Administrators should consider "the strength, durability and composition of a door, its hinges and frames, and the effectiveness of its latching and locking hardware."

From a fire-safety perspective, doors are for getting out. "In occupied buildings, egress doors can prevent entry, but they can never prevent exit," the NCEF says. "This iron-clad rule is the product of over a century of fire-safety regulation, molded by numerous tragic and sometimes horrendous building fires, and refined by decades of research and experience."

That means, according to the International Building Code, that "egress doors shall be readily openable from the egress side without the use of a key or special knowledge or effort."

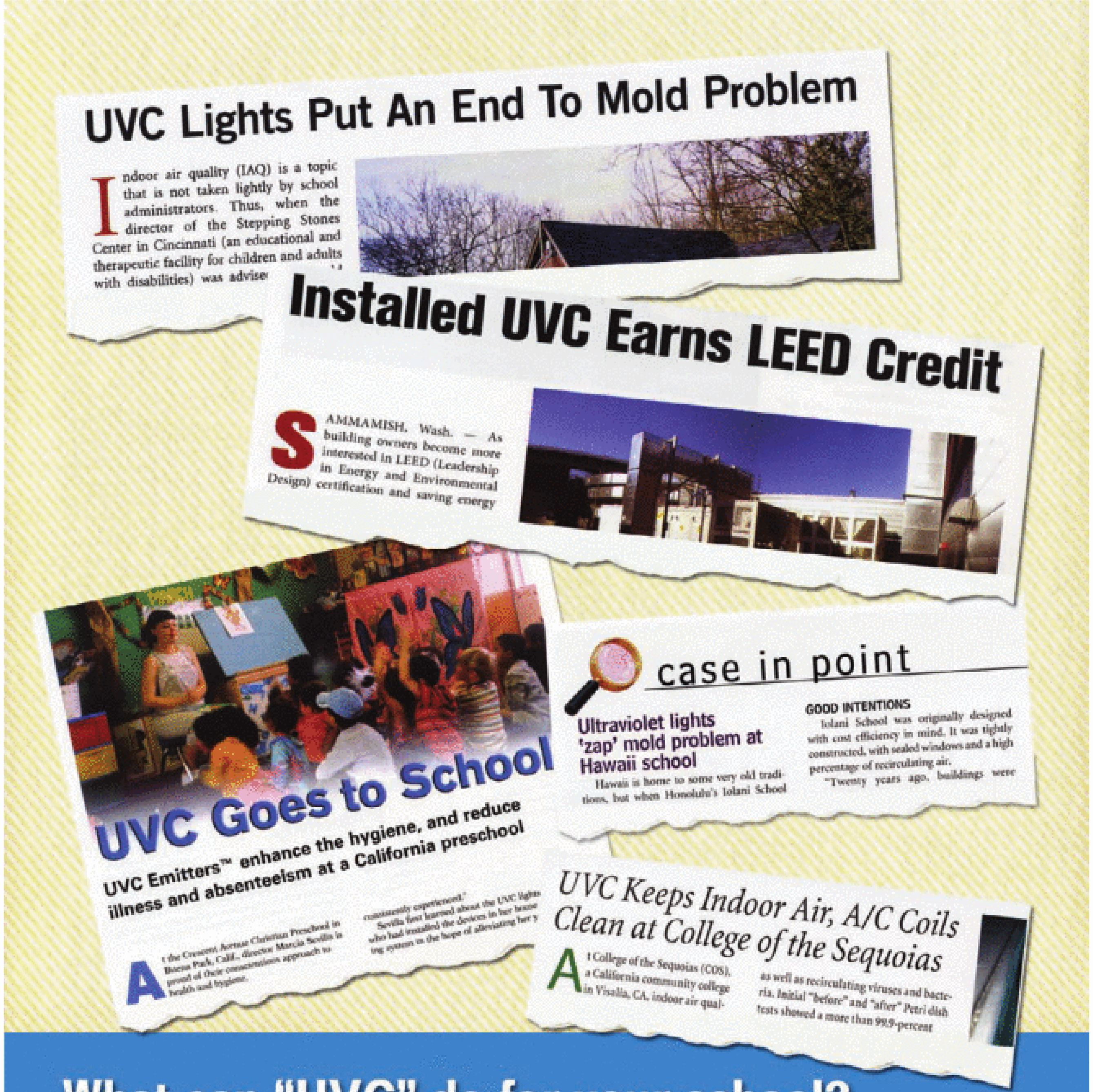
Having doors that are easy to open from the inside of a school makes it simple for students to defeat carefully designed exterior door security—on a whim or in a moment of inattention they may let in someone who doesn't belong.

To help prevent such security breaches, many schools and universities choose to enhance the security features of their exterior doors by installing the latest technology and equipment, and incorporating crime-prevention strategies.

Enhancing access control

The security industry has devised many systems and strategies that help schools overcome the breaches that can occur when a door system by itself is not sufficient to deter unwanted visitors. Among those:

•**Fewer doors.** The more exterior doors, the harder it is for a school's staff to monitor traffic in and out of a facility. Security experts recommend that schools limit entry to one main entrance, especially after classes are in session. Other doors should be locked so that outsiders can't enter. Some schools and universities, in a misguided effort to discourage intruders from entering through a door, especially one with a faulty locking mechanism, have used chains and



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padlocks to block access by outsiders. That violates the fire-code provision calling for readily openable egress doors.

•**Card systems.** A reader outside a door detects information held on a swipe card or proximity card and can unlock an entry door for those authorized to come into a building. The computerized systems can quickly update or delete a user's access privileges so that schools and universities can immediately deactivate a lost or stolen card. Cancelling a lost access card is less costly than having to re-key one or more locks in the event of a lost key.

Many card systems also enable school administration to establish different levels of access depending on the person, the time of day, or the area of the building. Still, card systems can be defeated. A card reader recognizes only the information on the card; it can't tell whether the appropriate person is using the card.

•**Keypads.** At some doors, a keypad system controls access. Employees and others authorized to enter are given a passcode that they enter on the keypad; the correct code unlocks the door. Like card systems, keypads eliminate problems associated with lost or stolen keys. Schools using a keypad system don't have to worry about lost cards, but the systems can be compromised if employees provide their code numbers to unauthorized users.

•**Biometrics.** Biometric systems use measurements of people's unique body characteristics to determine their identity and grant them access into a facility. The most common biometric system used is the scanning of hands or fingers. A scanner records an image of the hand or finger of someone seeking entry, and the system determines if the scan matches any of the people in its database of those allowed entry. This summer, the University of Florida in Gainesville switched from card access to hand scanners at its recreation center to cut down on unauthorized people using student IDs to enter the center.

Biometric systems solve the problem of users sharing their cards or passcodes, but some have raised privacy concerns about whether schools and universities should be collecting personal identifying information from employees, students, parents, vendors and other campus visitors.

•**Lighting.** Providing plenty of light to the area around an exterior entrance can deter someone trying to break into a facility or vandalize a door.

•**Video surveillance.** The increasing affordability of digital video systems has enabled schools and universities to install many surveillance cameras on their campuses. Video monitoring of doors, especially in remote areas of a building, help discourage intruders from entering a facility, and provide evidence of unauthorized entry when it does occur.

•**Alarms.** To combat unauthorized door-propping or detect a faulty door system that fails to close correctly, schools can outfit doors with alarms that notify the central office or security personnel when the door remains open too long.

•**Intercoms.** An intercom system can be used at a school entrance so that administrative employees can determine who is seeking entry before unlocking a door. A video camera that provides visual confirmation of the person's identity enhances the effectiveness of the intercom.

•**Crime prevention through environmental design** (CPTED). Strategies such as making sure an entrance can be easily observed can discourage unwanted visitors from trying to enter a building. A school should situate its administrative office so that workers have a clear view of the main entrance; the entrance should be free of obstructions from bushes or other landscaping. ■

Kennedy, staff writer, can be reached at mkennedy@asumag.com.

Break the chain

After taking control of Washington, D.C., schools last year, Mayor Adrian M. Fenty learned that the city's fire marshal had found nearly 2,500 code violations at schools, including the use of chains and padlocks to secure many of the exterior doors at Ballou High School.

That prompted the mayor to form an interagency task force to address security and life-safety needs in school facilities. The result is a $5 million plan to replace doors at several campuses and provide security more sophisticated—and safer—than chains and padlocks. Eight high schools—Ballou, Anacostia, Spingarn, Roosevelt, Dunbar, Wilson, Coolidge and Cardozo—and Johnson Middle School have been outfitted with doors that have a delayed-egress locking system that will alert school officials when a door remains open for more than 15 seconds.

The district also has installed automated recording cameras at all of the nine schools' door locations, and card-reader systems that will facilitate access to the school by district administrators and maintenance staff.

NOTABLE

85 Percentage of public schools that controlled access to school buildings by locking or monitoring doors during school hours, 2005-06.

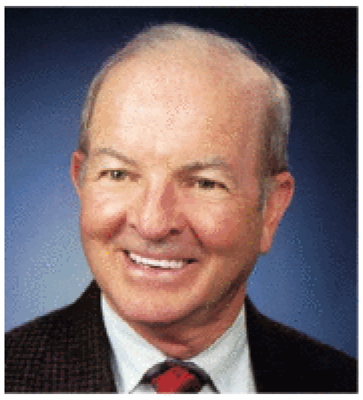
41 Percentage of public schools that controlled access to school grounds with locked or monitored gates, 2005-06.

Source: National Center for Education Statistics and Bureau of Justice Statistics, "Indicators of School Crime and Safety: 2007"

Up Close

Short-throw projectors are an impressive new technology tool.

C. WILLIAM DAY



Day is senior analyst at KBD Planning Group, Young Harris, Ga., a firm specialized in educational facilities and technology planning. He can be reached at bday@kbdplanning.com. www.kbdplanning.com

Over the last several years, short-throw projectors have been popping up in many education institutions. These video or data projectors can be positioned unusually close to the projection surface, minimizing installation constraints and maximizing presentation applications.

Imagine being able to get a bright, vibrant, 80-inch diagonal image from a projector placed only a few inches from the screen. Think about not having to worry about blocking the projector light path and casting huge shadows on a presentation, and never having to squint against the glare of the lamp. The short-throw projector makes it possible.

Short-throw and ultra-short-throw projectors are the "in" technology tool for educators. Much of their appeal comes from the ability to use them with interactive whiteboards.

Short-throw projectors can display large images while only inches away from the screen. In fact, when the projector is placed flush with the screen's surface—in other words, a throw distance of zero inches—it displays a 70-inch diagonal 4:3 image. From 3 inches away, the image is nearly 80 inches diagonal.

These new projectors deliver more than 2,000 ANSI lumens in their brightest mode. Short-throw projectors now on the market give enough lumen power that ambient light should not be an issue unless the sun is shining directly on the screen.

One of the problems in education facilities is how to get a big image in a small room. A variety of just-on-the-market short-throw projectors perform well in classrooms, conference rooms and auditoriums where the space is limited to a stage area, or locations where the one-and-a-half times the width of the screen mounting distance is not possible. The best benefit of using a short-throw projector is that it reduces shadows more than standard projectors when used with an interactive whiteboard. These projectors come with automatic keystone correction, networking connectivity and a remote.

Ultra-short-throw projectors, which are mirror-based, don't look like a standard multimedia projector. The lens has been designed to produce big-screen presentations from a short distance (typically 3 to 19 inches) between projector and screen. Short-throw projectors enable a user to have more space during a classroom presentation and eliminate shadow effects caused by people and objects in front of the screen. To produce this size image on a standard business projector, it would have to be at least 6 to 10 feet away from the screen.

Now for the bad news: progress comes with a price. You can expect to pay more for the short-throw because it has a specialized lens. But if you have a small room or want to be closer to the audience, short-throw projectors may be a worthwhile investment. ■

Name Your Price

Do schools really cost too much?

JAMES E. RYDEEN

Rydeen, FAIA, is an architect/facility planning specialist and former president of Armstrong, Torseth, Skold & Rydeen, Inc. (ATS&R), Minneapolis. He can be reached at Jrydeen@atsr.com.

The charge that "schools cost too much" is a constant. I discovered a speech delivered to the School Board Association in 1965 by my mentor, G. Clair Armstrong. His comments are appropriate today.

Armstrong said that every building represents a sizable financial investment, and nearly all buildings are expected to justify themselves economically. Some are built to be:

•**Rented**. Their cost must be in a range that the rent can be competitive with similar buildings, and still provide a fair return on investment.

•**Occupied for business purposes**. The cost of these buildings must reflect a reasonable proportion of the occupants' operating budget.

•**Used for recreational purposes**. Their cost must be reasonable in comparison with their use.

•**Viewed as monumental**, and justified only by the effect that they create.

A school must be a combination of all of these. It is monumental in that it represents a special place in the community. It is owned by community members and used by them for functions throughout the building's life.

Because the cost of building a school is shared by the community, everyone feels a sense of ownership. Some consider the building too expensive and others may say it's not expensive enough. Issues to consider:

•A cheap school building is not a good buy if long-term operations and maintenance costs are included.

•A school building is subjected to more abuse during its lifetime than other types of buildings. For this reason, schools should use better materials and systems than a commercial building, which are higher in cost.

•There is no magic number to the cost of a school building. There sometimes are uncontrollable factors, but as with most buildings, you get what you pay for.

The underlying question: Are we building facilities that are better than children need or deserve?

Any discussion eventually leads to some kind of comparison, which can be misleading. Architects who have designed a number of schools are likely to be identified by their "square-foot cost," but this is akin to a bowling average or golf handicap.

In my mentor's time of 1965, schools had better lighting, heating, ventilating and materials, and used space more efficiently to provide a better value for their communities. The same can be said of schools being built today. We are building better schools, starting with the design, quality and use of materials, and systems based on value engineering, life-cycle costing, and long-term operations and maintenance.

We are leaving the community a legacy as we forge ahead with sustainably designed buildings. So, do schools cost too much? The answer is "no" if the dollars are spent to:

•Provide a fair return on investment by providing facilities needed for long-term use.

•Reflect a reasonable proportion of the district's operating budget.

•Create facilities that are operated and maintained economically.

•Design functional facilities.

•Create a welcoming visual image.

•Enhance the educational process. ■

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Taking Stock

Conducting an audit for green-cleaning success.

STEPHEN ASHKIN

Ashkin is executive director of the Green Cleaning Network, a 501(c)3 not-for-profit educational organization.
www.GreenCleaningNetwork.org
SteveAshkin@GreenCleaningNetwork.org

Whether starting a new green-cleaning program or looking for opportunities to improve an existing one, schools and universities should start with an audit. Unfortunately, many audits focus solely on cleaning chemicals and miss many opportunities for improvement. With the appropriate information, education institutions can identify and prioritize opportunities based on importance, costs, risk factors and other criteria.

This column is the first of two addressing chemicals, equipment, liners and other products, along with some of the typical "red flags." Next month's column will look at training, procedures and other components for an effective green-cleaning program.

•**Cleaning chemicals.** Note the complete product name and manufacturer to gather Material Safety Data Sheets to determine product hazards. In addition, note the location of the product, especially if it isn't in a primary product-storage area.

"Red flags" include: ready-to-use products; dilution equipment; aerosol cleaning products; chlorine bleach, especially when found outside a laundry area; ammonia; products labeled as "dangerous," "flammable" or "poisonous;" products that occupants have brought from home; unlabeled or mislabeled containers; and damaged or leaking containers.

•**Paper products.** Note the recycled content, size of rolls, and if hand towels are roll or multifold. For roll products, note the size to see if it can be replaced with larger rolls. Also make note of dispensers.

"Red flags" include: multifold towel dispensers; and dispensers that are broken, damaged or otherwise incorrectly dispensing products.

•**Trash-can liners and receptacles.** Note liners' recycled content, type and thickness. Multiple sizes of liners typically means a lack of standardization in the size of trash cans and frequently results in bags that are excessively large, wasting resources and money.

"Red flags" include: trash cans requiring multiple liners; and trash cans with liners that are too large or too small for the can.

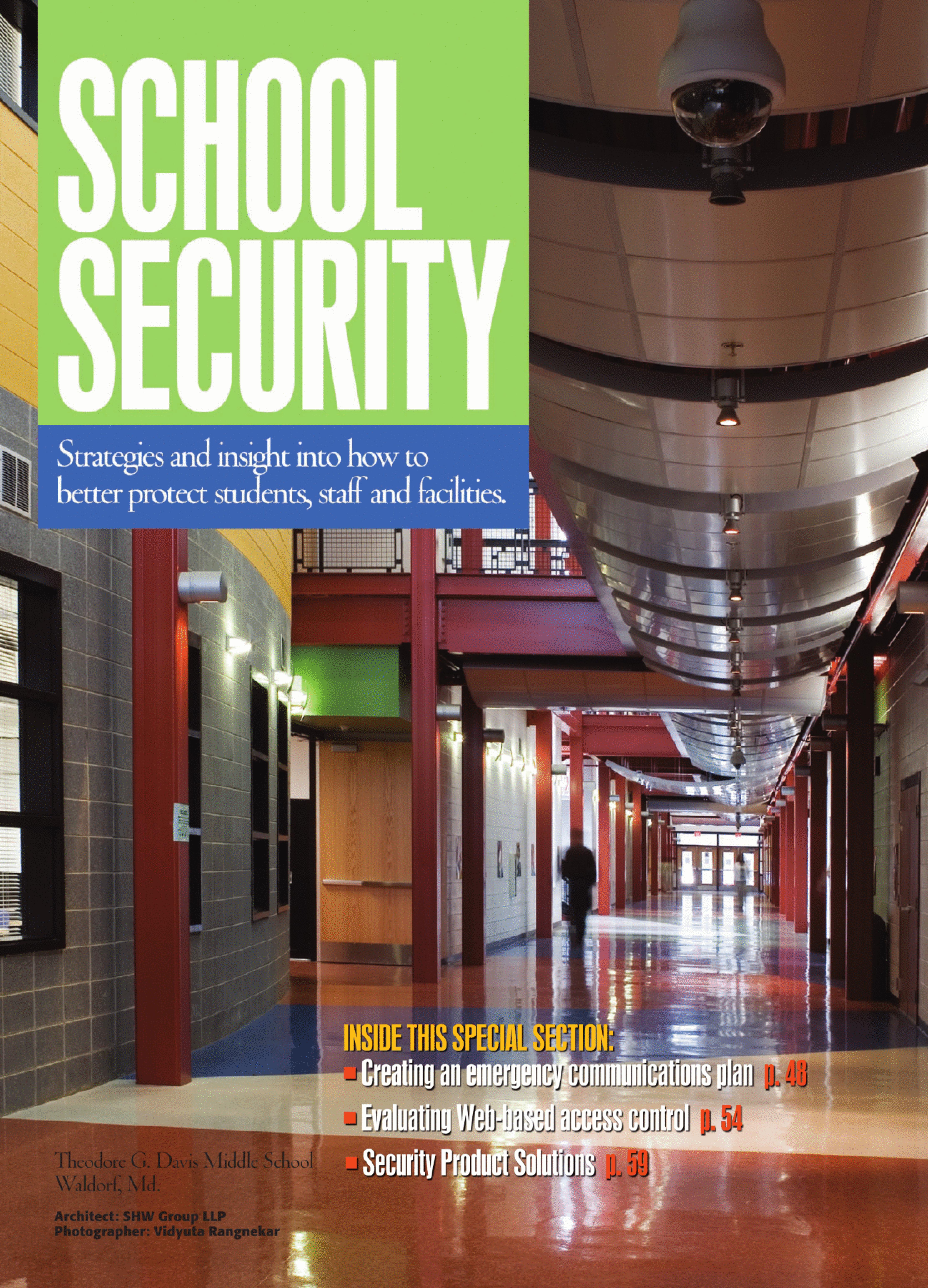
•**Janitorial equipment.** Note the manufacturer's name, model number and size, which then can be matched to equipment spec sheets. Assess the condition, noting damaged switches and cords.

"Red flags" include: visible damage, such a bare wires or frayed cords; vacuum cleaners that do not contain disposable filter bags; vacuum cleaner bags full to the top; floor burnishers without vacuum attachments; floor scrubbers that leave tracks because of damaged or misaligned squeegees; and floor scrubbers and carpet-extraction equipment with water left in the solution or recovery tank.

•**Entry mats.** Note size, condition and whether the mat is appropriate for the location.

"Red flags" include: short mats (mats should be 10 to 12 feet long); curling corners and edges; old, worn or loaded mats that cannot capture soil or moisture; mats that move when you walk across them.

•**Other products (e.g. mops, mop buckets, recycling containers, carts).** Note their state of repair, size and if they are appropriate for the task. ■



SCHOOL SECURITY

Strategies and insight into how to better protect students, staff and facilities.

INSIDE THIS SPECIAL SECTION:

- Creating an emergency communications plan p. 48
- Evaluating Web-based access control p. 54
- Security Product Solutions p. 59

Theodore G. Davis Middle School
Waldorf, Md.

Architect: SHW Group LLP
Photographer: Vidyuta Rangnekar

WHEN SECONDS COUNT

The main ingredients in an emergency plan are prevention, preparedness, response and recovery.

By Patrick V. Fiel Sr.

During an emergency situation, it is essential to maintain communications.

Natural disasters happen in many ways and places: a hurricane in Florida, a flood in Missouri, a tornado in Oklahoma, a wildfire in Colorado, an earthquake in California.

Then there are the manmade disasters, such as chemical spills, traffic accidents or a shooter on campus.

Although they may differ in cause, they share one thing in common: each can create tremendous property damage, personal injury and loss of life. And each can, and often does, affect the operation of a school, college or university.

As we enter a new school year, it's time to dust off old emergency plans or create one if none existed before. Administrators cannot mitigate all damages from natural disasters and crises, but with a well-written and practiced emergency plan, it is possible to limit damages, injuries and deaths. It will take time and effort from many people to create the plan, and with good fortune it will never need to be used. But should it ever be needed, the effort will have been worth the wise investment.

A good start

A successful emergency plan, whether new or updated, requires the participation of all segments of a campus: police or security, information technology, maintenance, human resources, faculty, parents and students. Begin the process by creating a task force. During the first meeting, select leaders, delineate roles and assign tasks. Obtain complete contact information, such as office, home

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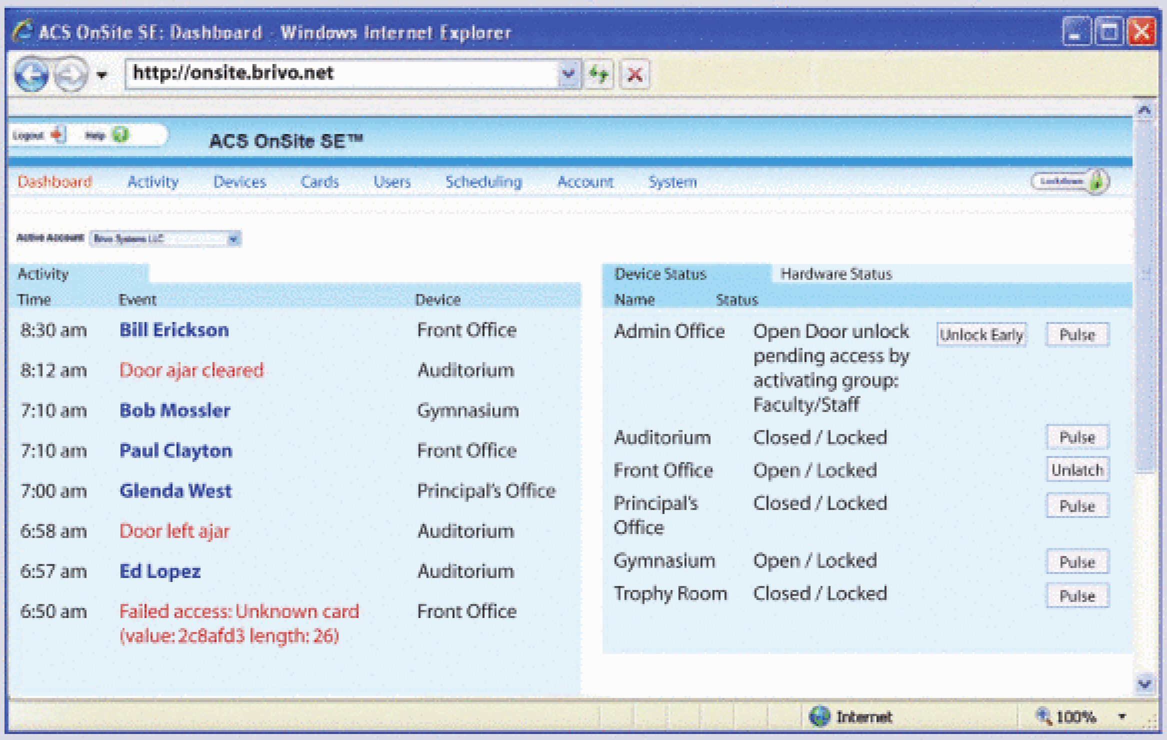

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and mobile phone numbers, and e-mail addresses for each member of the task force. Be sure to involve administrators, other decisionmakers, local law enforcement, firefighters and paramedics (first responders). They are an integral part of an effective emergency plan.

In addition, provide first responders with contact numbers for all task force members, including an updated list of how many people are on a campus, the likely locations of any disabled persons that might need extra assistance, and blueprints and maps of the campus (if available).

With the task force in place, begin a risk assessment to try to anticipate any emergencies that might occur on campus. Administrators should work closely with campus police officers, security staff, and local law-enforcement and fire professionals. These professionals likely have been through many of the emergencies you are preparing for, and their expertise will be valuable. Walk around the campus and look for possible vulnerabilities, making note of any animals or toxic materials on campus. Also consider the surrounding community, because what happens there may affect a campus.

As the plan progresses, encourage task force members to take responsibility for their part of the plan. For example, they may lock or unlock doors, stop or redirect traffic, power down vital equipment or lead evacuations.

With a team in place, roles defined and a risk assessment completed, draft the plan in writing and conduct practice drills. After practicing the plan, carefully evaluate it to see what worked and what did not. Make adjustments where necessary, and then conduct more drills. Once the plan is set, create a final document and distribute it to every campus employee. And then practice it again. This should be a living document that can change as needs and circumstances change.

Practice the plan at least twice a year to ensure that all those on campus—especially new employees—know their role and are comfortable executing it.

If a campus needs to be evacuated, administrators should find a place that can accommodate evacuees, such as a nearby shopping mall, church or park. And have a backup ready if weather conditions make an outdoor site dangerous. Transportation is an important part of this process.

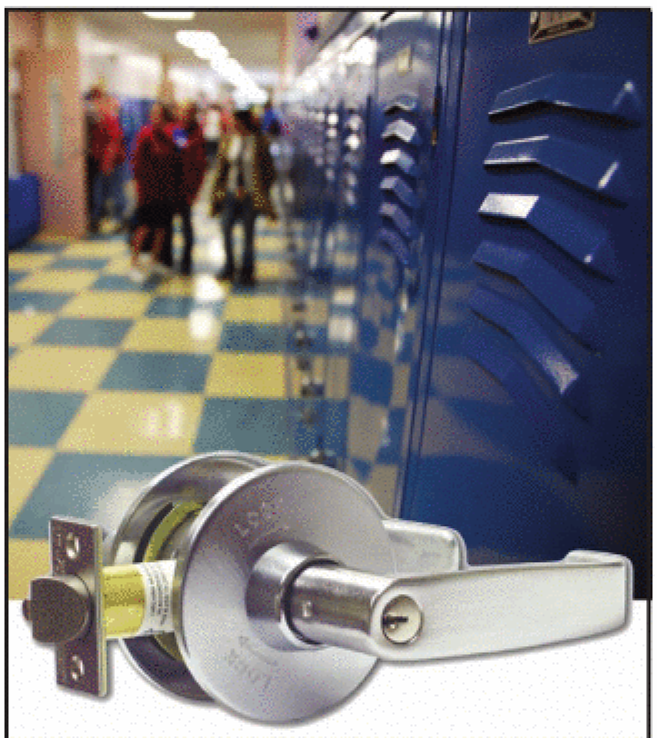
Talk it out

School officials need to maintain communications with people during an emergency. Faculty, staff, students, parents and the media need up-to-date information. In an emergency, widely disseminated, current information can be a lifesaver.

> Administrators should work closely with campus police officers, security staff, and local law-enforcement and fire professionals.

Mass-notification systems can address this need. Web-based solutions are available that can notify thousands of people within seconds, giving them vital information and instructions during a crisis. This information can be sent to a person's home or mobile telephone, e-mail address, digital pager, fax machine and wireless PDA device. Each user can choose a preferred communications device. This solution also can be used for non-emergency communications, such as a reminder to parents of a scheduled teacher conference or to remind students of changes in their daily schedules.

These solutions require no software



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> School officials need to maintain communications with people during an emergency.

or system installation; they accept message input from an Internet-connected computer or any telephone. A designated staff member can type in a message that will be turned into a computer-generated voice or text message, or a user may request to record a message in his or her own voice. Should a computer not be available during an emergency, a staff member can call a toll-free number to reach a live representative who will compose and send the message.

The receipt of every message is verified and recorded automatically; busy signals or unanswered messages result in repeated contact attempts until the message is received. Messages can be delivered in 10 languages.

In addition, new outdoor emergency-communication systems are available that use intelligible voice technology to provide warnings and real-time information to people in dangerous areas. These systems, which can be pole-mounted or placed on a portable platform, use specialized speaker technology that can be heard clearly up to one-quarter mile away, broadcasting messages to thousands of people in seconds.

These systems help schools quickly reach large numbers of faculty, staff and students with vital information.

Make it clear in your plan who has the authority to issue emergency messages. Have a multi-level chain of command so that if the first designated person is unavailable, it is clear who assumes that responsibility without delay. Seconds count in an emergency.

The main ingredients to an emergency plan are prevention, preparedness, response and recovery. Minimizing injury and property damage is all about meticulous planning—and a lot of practice. Find roles in the plan for as many people as possible; keep in close contact with first responders; and take advantage of available technology. No plan can guarantee perfect results, but having no plan at all increases the chances of a disastrous outcome. ■

Fiel is the public-safety adviser for ADT Security Services, Alexandria, Va. For six years, he was executive director of school security of Washington, D.C., Public Schools. He can be reached at pfiel@adt.com.

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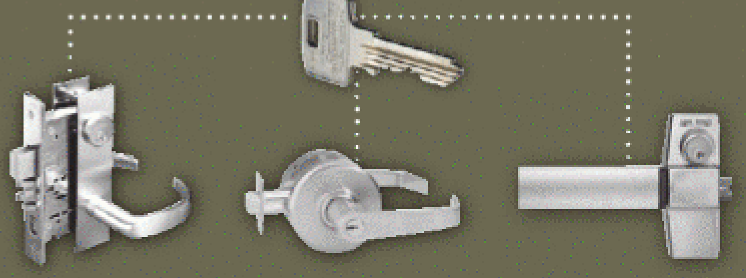

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CONTROLLED VIEWING

Tips for choosing a Web-based access-control system that fits with your overall security program.

By Rueben Orr

At Midland Elementary/Middle School, Midland, Pa., visitors must enter through a single point of entry, which is also under video surveillance.

If you are looking to install an access-control system or replace an existing system, it is important to understand the new options in electronic access control (EAC). The case for replacing lock-and-key systems, particularly in an education environment, is clear-cut: lost and stolen keys present a risk; there are no records of user access or unauthorized attempts to access; there is no control over when users can enter and no lock-down capability;and re-keying can be expensive. By using an electronic access-control system, schools have more control over the physical security of buildings and campuses, and can save a significant amount of money over the life of the system.

Understanding the features and functions provided by new technologies in physical security is key to selecting the best option.

Breaking tradition

A "traditional" electronic access-control system entails software installed on a dedicated computer situated within the building being controlled. This is a common setup, but it is outdated; trying to maintain the integrity of a security program can lead to disastrous problems.

Why? Operating systems get upgraded, and the original software may no longer work or be supported. Computers are stolen, and schools can lose the ability to administer the system, but even worse, the user database can be compromised. Software is licensed, and if schools want to install the software on another computer, they may need to buy another license. New features are added

to later versions of software, and institutions often need to buy and install upgrades to get full system benefits.

Many traditional electronic access-control systems aren't very network-friendly; they were not designed to reside on a network. Instead, these systems have been forced onto the network with the use of third-party serial-to-IP converters. This often results in IT administrators requiring separate networks for physical security in order to keep their core network and applications from being affected by devices and applications that make it difficult or impossible to carry out system policies.

On the Web

Web technology has made its way to the world of access control, and the result is more choices for education institutions. Before committing to a new system, review the choices in IP electronic access control solutions:

•**Web-enabled.** These access-control systems still rely on on-site servers and software, but provide remote access to that server by making it browser-accessible from a computer situated just about anywhere. Most Web-enabled applications support either a dial-up or network configuration for remote access. With Web-enabled applications, a user still has to take responsibility for server maintenance, database backup, security updates and software upgrades.

•**Web-based.** Expanding on the Web-enabled concept, some companies offer products that eliminate the need for on-site servers or software by embedding all the necessary functionality within the controller itself. Most Web-based applications support network configurations through a LAN/WAN or VPN and can control any location on that network through any PC connected to that network as long as the user has a valid login and password. This array of products is ideal for customers with an established IT infrastructure and support, and a need for remote management.

•**Web-hosted.** Similar to online banking and hosted customer relationship management (CRM) applications, Web-hosted applications, also referred to as Software as a Service (SaaS), are becoming increasingly popular. In an SaaS model of access control, the application is hosted by the service provider, along with the user database. A secure, centralized data center takes care of the software and upgrades, along with backups, archives, redundancy and disaster recovery. The end-user administrator accesses the application by using any Web browser to log into his or her account. As with Web-based solutions, eliminating the server and software frees up the user's IT department to focus on the enterprise's core business. A SaaS solution also eliminates the need for an established network or dial-up configuration among multiple

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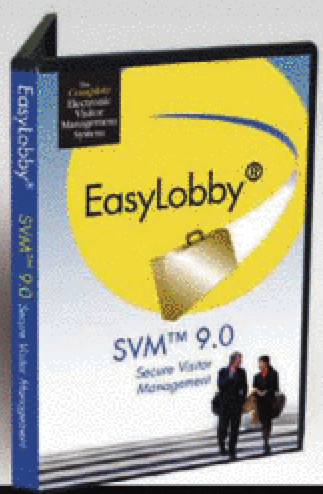

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Web services bring about a whole new way of thinking for the access-control industry.

sites, enabling the administration of multiple buildings and remote facilities.

•**Security dealer-managed applications**. Although Web-hosted services such as those previously mentioned provide users with ultimate flexibility when managing their access-control systems, some customers wish to rely on their security dealer entirely. Security dealer-managed applications allow the customer to submit access-system change requests to the installing security dealer. With security dealer-managed applications, traditional security dealers use Web-hosted applications to provide a "concierge" service for system redundancy, disaster recovery and managed services on a level not available with traditional server-based access-control applications.

Evaluating needs

Web services bring about a whole new way of thinking for the access-control industry. Each category offers some level of cost or time savings to the user over standard locks and keys. In some instances, Web service providers can offer a greater level of security and reliability than an IT or security department can provide. When evaluating access-control systems, consider the following:

•**In-house resources**. Do you have the IT staff to handle backups, security updates and system upgrades? Do you have human-resources personnel available to handle system changes, such as adding or deleting users and maintaining door schedules?

Evaluating existing resources is a good first step. Web-hosted and central station-managed solutions require little or no on-site IT support; local systems will need regular backups, maintenance and upgrades.

•**Accessibility needs.** Do you have one person to manage your access-system changes, or will multiple departments manage pieces of the system? Do any of your administrators need remote access, for example on snow days or during travel?

Each type of Web service handles administrator licenses differently. Some systems limit the number of administrators, and others offer unlimited licenses as part of the service. It also is important to review the technical capabilities of administrators. Choosing a system that is easy to learn and understand will ensure that existing and new administrators are not hindered by system complexity. Evaluate your administrative needs to ensure that you can grow and manage the system without limitations. Seeing a system in action is essential, so be certain to ask for a demonstration of the Web service capability and interface prior to making a decision.

•**Operating system environment.** Will you need something that can be used on both Macintosh and Windows PCs?

Many software applications work only on the Microsoft Windows operating system, but many schools use Apple products. Or your administrator may use a Mac at work but have a Windows-based PC at home. Most locally installed software will work only on one platform. A Web-hosted application and Web-based systems that need no software installed are accessed via a Web browser, independent of local operating systems. As long as you have a Web browser and Internet access, your operating system is irrelevant.

•**Scalability.** Are you managing access for one building or many? Are they situated on a single campus or spread throughout a region or even globally? Are all of the locations on an existing network? Do you have remote or unmanned

St. John's High School: A Web-based system maintained onsite

St. John's College High School (SJC) is an independent, Catholic, co-educational college-preparatory school. Situated on a 27-acre campus in Washington, D.C., with 1,100 students and 150 faculty and staff, St. John's formerly secured its buildings with a standard lock-and-key system.

The SJC administration sought improved access technology to provide school administrators with maximum flexibility, using existing infrastructure, and give them a "tiered" management system to fit the overall needs of the school and each specific administrator.

The new Web-based, on-site data-storage control system enables SJC to schedule an open time for the building, as well as the ability to lock the building once everyone is inside after the official start of the day. Deliveries are buzzed in while the building is locked during these hours. As part of its emergency plan, St. John's also has installed a single-button "lock-down" for the entire campus. Other benefits include:

•Improved access control, visibility and reporting.

•Remote administration of the system from any Web browser anytime, anywhere.

•Card and schedule management, and controlled and tracked access for the athletic building, which is used by 15 different athletic programs at different times of the year.

•System scalability, flexibility and the ability to expand the system where and when appropriate.

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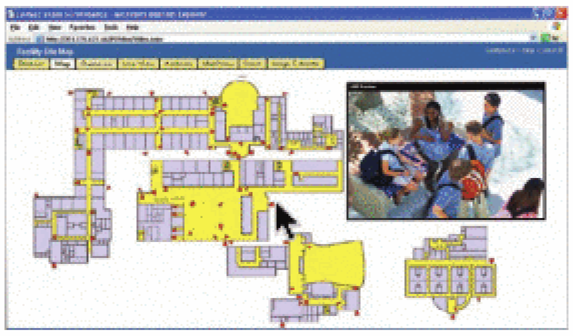

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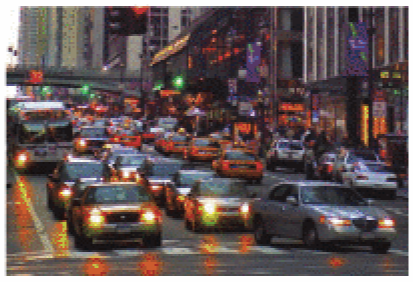
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Midland Borough Schools: A Web-hosted system deployed across multiple buildings

Prior to installing a new Web-hosted system, Midland Borough School District, Midland, Pa., left classroom doors open, and the back and loading-dock doors were unlocked at most times.

"There was basically access to the whole building," said Kim Kaiser, dean of students/safety and security.

It's not that Midland had no security; the school had a card-reader access system, and employees were logged in as they entered the buildings. But Kaiser knew the school had to be more prepared.

"If we can get a few extra seconds or even minutes and buy some time for the emergency response personnel to get here, then we need to install the technology to ensure such capabilities," he says.

Through a Web-hosted access-control system, the school's front, back, loading dock and teacher access doors are secured and monitored. Staff and teachers with access cards have easy access, but visitors must enter the school through a single point of entry, which also is under video surveillance. A keypad was installed on the front door along with an intercom. Midland Borough Schools has experienced other improvements to security and operations:

- The system logs all activity. The school now has an accurate record of employees coming and going, can log in deliveries, and can confirm delivery times.
- The system enables Kaiser and his staff to lock down the entire building quickly and confidently.
- Midland staff needed minimal training to get up and running.

facilities to manage? Will you add additional facilities in the future?

Each system differs on the type of communication necessary to connect multiple facilities. Look for systems that accommodate multiple communication mediums such as LAN/WAN, satellite broadband, WiFi, DSL, cable and cellular wireless. ■

Orr is director of business development for Brivo Systems, LLC, Bethesda, Md., which worked with St. John's High School and the Midland Borough School District (see sidebars). He can be reached at rueben.orr@brivo.com or (240)271-8158.

WEB 101

For more articles on security and life safety in education institutions, visit the Security "Articles by Topic" section at ASUmag.com.

Web-based Access Control

Brivo. Brivo's Web-based access-control systems require only Internet access and a Web browser—any Web browser—regardless of operating system, to manage your entire account. It offers all of the standard access-control features you should expect, with an intuitive interface so you can get the most out of your access-control system. Visit the website at www.brivo.com/education for more information on how Brivo serves education institutions.

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CEIA USA Metal Detectors Provide High Degree of Security and Increased Flow Rate for University Events

CEIA USA. CEIA USA Metal Detectors meet the security and ease-of-operation needs of universities that run many events in multiple facilities. They have proven to be the most effective tools in protecting strategic buildings and large gatherings indoors or outdoors, such as in stadiums and arenas. These metal detectors offer a 100 percent detection rate and exceptional reliability. They also have the highest level of throughput available—even in high-security settings. Visit www.ceia-usa.com for more information.

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SecureBolt™—None Stronger

Corbin Russwin. No exit device is stronger than the Corbin Russwin ED5200S Series with SecureBolt™. With a static load force resistance of more than 3,700 pounds and 7.7 million cycles, SecureBolt is proven to be unequaled in strength and durability. To learn more about SecureBolt, visit the website at www.corbinrusswin.com/37.html.

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Layered security

Community college employs multiple IT strategies to secure student data

Software Security Solutions. Colby Community College (CCC), Colby, Kan., has been slow in incorporating technology on campus, but it now has reached a point where students expect it, says Debbie Schwanke, public information officer.

More technology on campus means a greater concern over protecting electronic data—both on disk and when it is being transferred via e-mail. CCC's previous anti-virus package wasn't doing its job, and the college experienced a virus that took down its 400-machine network for more than a week.

The college began looking for a better solution and found Software Security Solutions (SSS), which includes ESET's NOD32 anti-virus program and Webroot's Spy Sweeper. NOD32 uses a technology that proactively protects against new and unknown viruses, as well as those already in circulation. Spy Sweeper's technologies fight against existing spyware and adware, as well as unidentified emerging threats.

SSS is a strong advocate of layered security and focuses on helping clients choose the best mix of solutions for their situations. The college chose a layered security approach as well.

CCC installed a Juniper Networks firewall, which inspects individual "packets" of data for potential problems as they enter the network from the Internet.

"Everything is scanned when it comes through the firewall, then by the anti-virus and anti-spyware programs," says Jess Randel, director of information technology. "That way we're not relying on just one thing."

The college added another layer of security by dividing the network into different virtual local-area networks (VLANs) to prevent problems in one segment from spreading to the entire campus.

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Colby Community College, Colby, Kan. Photo courtesy of Colby Community College

Seating selection

Laboratory remodel prompts college to replace outdated chairs with ergonomic seating

The Evergreen State College, Olympia, Wash.

BEVCO Precision Manufacturing Company. The Evergreen State College, Olympia, Wash., recently remodeled its existing chemistry and microscopy laboratory facilities.

As part of the project, the college determined that its outdated laboratory chairs also would need to be replaced.

The primary requirements for the new seating were affordability, comfort, resistance to chemicals, ease of adjustment and durability. In addition, a more sculpted, modern appearance was desirable.

After students and faculty carefully evaluated several manufacturers' products, the college chose BEVCO Precision Manufacturing Company's Series 7000 Polyurethane chair. It purchased 110 units for its laboratories.

"When possible, we prefer to buy American-made products over those products that are manufactured overseas," says Martin Beagle, science operations manager. "The chairs we received from BEVCO are first-rate, affordable and made in the USA."

The chairs are designed for comfort and long-lasting use in harsh environments. They offer total body support with advanced ergonomic features. The self-skinned polyurethane seats and backs resist stains and damage from punctures and chemicals. Molded-in ventilation ribs increase air circulation for comfort and facilitate easy cleanup. They are equipped with easy-to-use pneumatic height adjustment, an ergonomic waterfall seat design, fully adjustable contoured back, 360-degree swivel and a sturdy, five-legged molded or tubular base.

"Students are using all of the options on these chairs," says Beagle. "Easily adjustable height and back positions, and foot rings are popular with our students."

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Dismissal tool

Divide The Ride. CarLine Manager (www.carlinemanager.com), which is free to use, uses Web-based technology, making it easy for parents and schools to operate. Parents securely log into the school's CarLine Manager website and assign other parents or relatives to pick up their children on a given day. Prior to dismissal each day, CarLine Manger automatically e-mails the school with an up-to-the-minute car assignment report.

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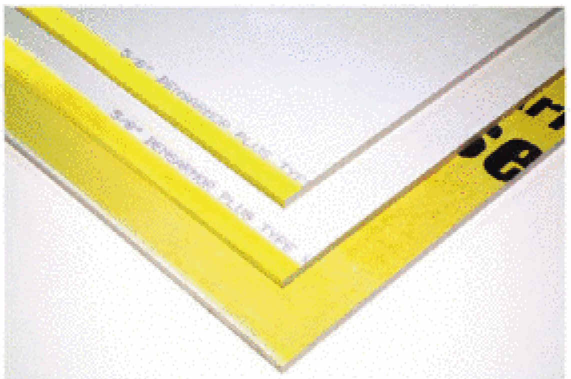

Green building materials

Georgia-Pacific. Mold-resistant DensArmor paperless interior drywall and DensArmor Plus moisture- and mold-resistant paperless interior drywall are GREENGUARD Indoor Air Quality Certified and have received GREENGUARD Children & Schools Certification. This certification subjects materials to additional emissions testing to identify low-emitting products that can be used to provide school children with reduced exposure to indoor pollutants.

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Lightweight vacuum

Electrolux/Sanitaire. The DuraLite upright vacuum weighs only 10 pounds because of the liberal use of magnesium in the construction of its critical parts. Using magnesium instead of plastic reduces weight and adds durability. The vacuum has a powerful commercial-grade motor and a wide air path to eliminate clogging. Its wide cleaning head enables a faster finish, and large rubber-coated wheels add durability and operating ease on carpet or bare floors.

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Observation window panel

Vistamatic Vision Panels. The Vistamatic Corner Unit offers 100 percent more viewing capacity by increasing the space between each band by one inch. It is designed for unrivaled sightlines, offering the ability to view twice as much area as a traditional window unit, including the ability to monitor two rooms at the same time.

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Flooring adhesive

DriTac. DriTac Eco-6200 "Green" Pressure Sensitive Wood Flooring Adhesive contains no VOCs or solvents, is easy to spread, and has superior bond strength for wood and cork flooring installations of multi-ply engineered plank, acrylic-impregnated wood, plain-back parquet, foam-backed parquet and cork tile.

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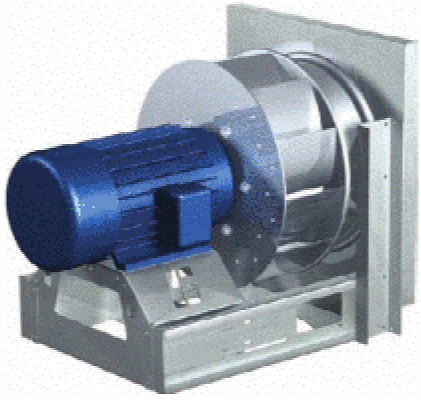

Plenum fan

Greenheck. The Model QEM Plenum fan is ideal for lower-pressure supply or return air-handling applications where first cost is critical. It features a 12-bladed airfoil wheel that reduces energy consumption and sound levels, and has a compact footprint that requires little floor space for installation.

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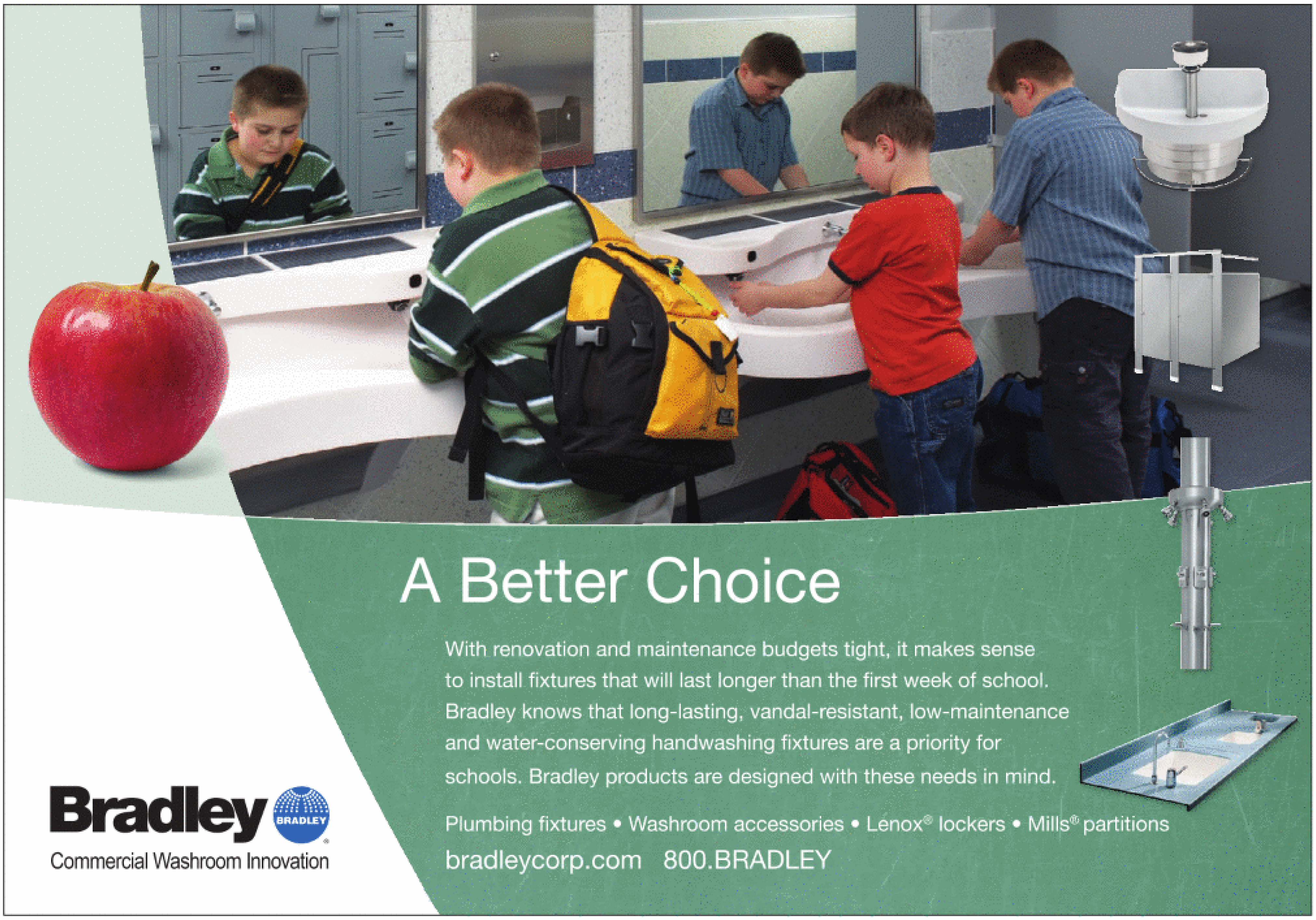

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High maintenance

Portable cleaning system helps elementary school save time and labor in its custodial operations

Wilson Elementary School, Cincinnati.

Hydro Systems. Wilson Elementary School, one of nine schools in the Forest Hills School District, Cincinnati, faces a cleaning crunch when activities at the building run late into the night.

"We have a ton of activities at that school, so I have the third-shift people usually come in at 10:30 or 11 p.m. to get started on the cleaning," says Kevin Reid, assistant head of maintenance and district supervisor of the custodial staff.

Until recently, that meant the custodians used conventional cleaning techniques that often were backbreaking and unpleasant, contributing to lowered employee morale, increased turnover and the associated training costs.

In March 2007, Reid agreed to have Wilson Elementary be part of a test site for Hydro Systems' Integrated Cleaning System (ICS), an affordable, self-contained, portable-cleaning system that uses correctly dosed cleaning chemicals that are applied by a spray nozzle using low-flow/low-pressure technology. Its low-flow design uses only a half-gallon of cleaning solution per minute, eliminating the need for wet/dry-vac recovery and the handling of contaminated water.

Operation of the ICS unit includes filling the 12-gallon water tank, using the selector valve to choose any of up to four different chemicals to be dispensed, and applying the cleaning solution with the low-flow/low-pressure spray nozzle. After cleaning, the solution is rinsed away with water from the spray nozzle. The compact design and simple operation eliminate time-consuming setup and breakdown, and reduce the overall cleaning time.

Reid and the staff at Wilson Elementary School were so pleased with the ICS' performance that the unit remains an integral part of the facility's daily cleaning regimen, and the district is considering purchasing additional units for its other buildings.

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Hand towel dispenser

Kimberly-Clark Professional. The Dual Folded Hand Towel Dispenser delivers towels from two separate openings, allowing two people to take towels at the same time. Because it holds twice as many towels as existing folded towel and recessed dispensers, the new dispenser has fewer run-outs, reducing maintenance time. Other benefits include easy loading, a clear view of towels and prompt refills.

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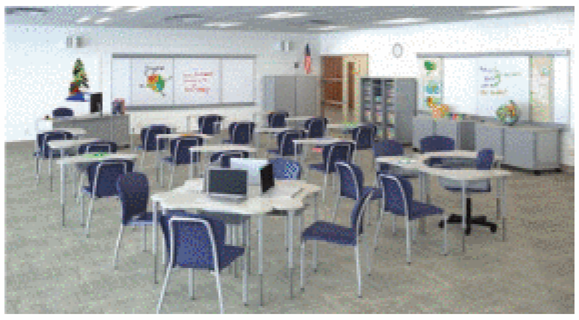

Education furniture

The HON Company. SmartLink classroom furniture is designed to organize and manage the K-12 classroom with a single product line. Its four main components include a teacher station, modular storage, a wall rail system and student desks. The products visually integrate to provide a holistic solution that supports space utilization and a variety of learning styles, as well as a variety of technology requirements.

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Water-saving showerhead

Moen. Ultra-Low Flow showerheads in fixed and handheld models have a flow rate of 1.6 gallons per minute, offering a 30 percent water savings from the industry standard of 2.5 gallons per minute. They feature an optimized spray pattern to preserve the showering experience that users are accustomed to from full-flow showerheads. Innovative spray formers increase the velocity of the water streams.

Circle 164 for more information
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Backpack vacuum

ProTeam. The QuietPro BP HEPA has HEPA Level Filtration and is equipped with patented QuietPower technology that results in a sound output rated below typical conversation levels. It captures 99.97 percent of particles measuring .3 micron and larger for optimal indoor air quality. The lightweight, ergonomic design and easy-to-reach tool belt increase operator comfort and productivity.

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Seating collection

Gunlocke. The Olla seating collection provides a subtle fusion of material and form by integrating natural wood elements into the interior design of a space. The seating collection offers a combination of aesthetic appeal with flexible function throughout all of its elements: high- and low-back conference chairs, along with wood leg and cantilever guest seating.

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Parking meter security

Videx. CyberLock electronic cylinders are available for parking meters. A meter's existing mechanical lock cylinder can be replaced with an electronic cylinder. Parking-enforcement officers can access all the meters on their routes with one pre-programmed electronic key. Each key contains permissions on what locks the key can open.

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Heating and cooling upgrade

Split-ductless HVAC system allows historical university buildings to regulate indoor temperature with minimal impact

University of Notre Dame, Ind. Photo courtesy of Ron Hart/Hart Creative, Inc.

Mitsubishi Electric. Many buildings on the University of Notre Dame, Ind., campus were designed before the arrival of air conditioning and offer minimal auxiliary space for ducting. Options to provide building occupants with a comfortable environment for the 12 weeks out of the year when it is hot and humid in Indiana are limited.

The Mitsubishi Electric HVAC Advanced Products Division offered a cooling and heating solution ideally suited to historical retrofit applications. Mr. Slim split-ductless cooling and heating equipment and the CITY MULTI Variable Refrigerant Flow Zoning (VRFZ) system are suitable solutions. Designed for historical structures, the outdoor units have a small footprint, do not intrude on the integrity of the architecture, can be hidden easily with landscaping, and perform quietly.

The indoor units function with low sound levels—ideal for chapels, libraries and study rooms—and require no ductwork. For Mr. Slim systems, a three-inch hole in the exterior wall is all that is needed to connect the ductless indoor units to the outdoor units with electrical wires and piping.

The systems have been installed in the football stadium, Cushing Hall, an athletic department breakroom and video room, an art department computer lab and departmental offices, a computer classroom in the psychology department, a student study room in a residence hall, a dishwashing room in a dining hall, a television studio in the School of Arts & Letters, and an office complex in the School of Earth Sciences.

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Hand cleaner

Permatex/ITW Devcon. Fast Orange hand cleaners dissolve stubborn grease and grime to leave dirty hands clean and smooth, without water. The citrus extract not only cleans, but also gives Fast Orange products a fresh citrus fragrance. Added conditioners prevent hands from drying out. Cleaning agents all are non-toxic and biodegradable.

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Handheld surveillance

Dedicated Micros. MobileIPCamViewer enables customers to watch and control cameras connected to Dedicated Micros digital video recorders via their cell phones, without having to be in front of a computer or security control station. This capability is ideal for applications where security or management personnel cannot always be on-site. It is integrated with many major cell-phone manufacturers, with support for more than 300 different models.

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Fume hood

HEMCO. UniFlow SE Fume Hood is designed for high efficiency, energy savings and maximum user protection. The aerodynamic face opening with airfoil provides uniform airflow into the fume chamber. A constant-volume, low-flow hood with the VaraFlow baffle system efficiently directs the airflow through the fume chamber to the exhaust outlet with minimum turbulence and maximum user protection.

Circle 170 for more information
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Slowing traffic

Radar speed signs increase school-zone safety

SpeedCheck. In 2007, the City of Mount Vernon, Wash., installed eight SpeedCheck radar speed signs at school zones throughout its jurisdiction. This brought the number of units employed by the city to 14 and reflects the success the technology has had in increasing child safety since it first began using radar speed signs in 2005.

The unit's highly visible display, scheduling capabilities and traffic data-collection features all have been employed by the city in its efforts to slow traffic around schools and playgrounds during critical school hours. SpeedCheck signs are designed specifically to slow traffic around school zones, on neighborhood streets and other locations where speeding cars jeopardize the safety of pedestrians and other motorists. The high-visibility signs show drivers the actual speed of their approaching car and can be set to flash when drivers exceed a predetermined limit. An internal timer can be used to schedule automatic speed limit changes based upon the time of day. The MUTCD-approved display uses UltaClear contrast enhancement technology to maximize the visibility of the display. The flashing lights remind speeding drivers to slow down, and also create a self-enforcing environment.

City of Mount Vernon, Wash. Photo courtesy of Dean Gilbert

All of the SpeedCheck signs in use are solar-powered. Eight of the units are equipped with traffic data-collection capabilities that make it easy to assess the effectiveness of the signs.

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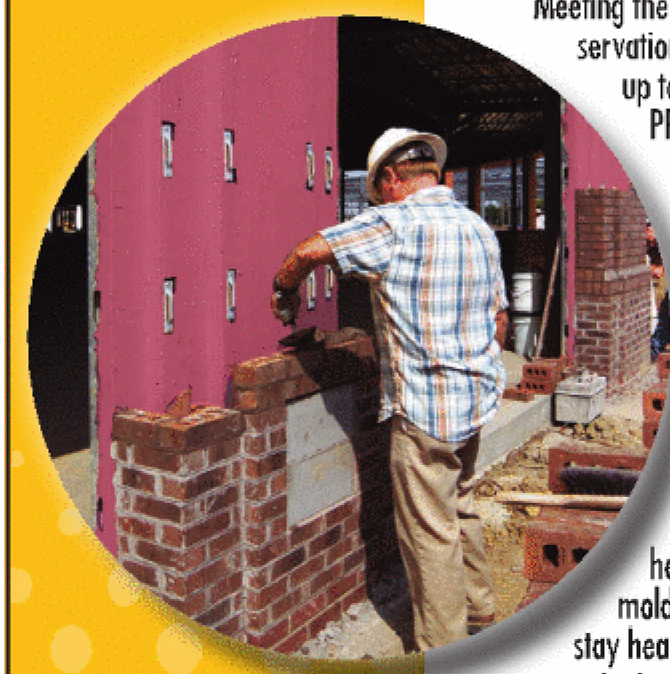
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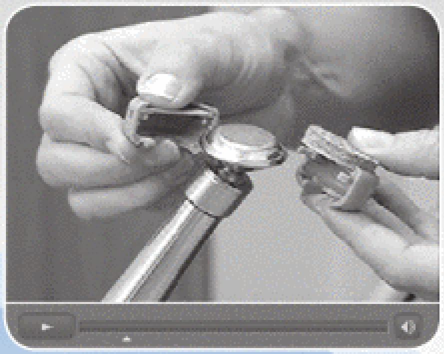
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Energy exchange

Water-source heat pumps help high school recognize energy savings and gain LEED certification

McQuay. When Whitmore Lake High School, Ann Arbor, Mich., opened, it was one of the first high schools in the state to achieve LEED certification. Among its many sustainable features is a geoexchange system for heating, ventilating and air conditioning, which includes 67 McQuay water-source heat pumps.

School officials realized that any additional first costs for the geoexchange system would be offset by energy savings. Their simplicity further reduces costs. Geoexchange systems do not require chillers, cooling towers or boilers, and the closed-loop, water-circulating system requires very little maintenance. During cold months, heat is transferred from the ground via the closed-loop circulating system to individual McQuay water-source heat pumps. During warm months, heat is transferred out of the school and rejected into the ground.

Whitmore Lake High School, Ann Arbor, Mich.
Photo courtesy of Whitmore Lake High School

Whitmore Lake's geoexchange system goes a step further in reducing energy use by combining a horizontal loop and pond system. About 47 miles of pipe are laid in a horizontal field and a 15-acre pond. The system has two horizontal layers of piping trenches dug 8 feet deep. The top pipe is 6 feet below the surface and loops back with a second pipe 2 feet below that. The 430-ton HVAC system delivers conditioned air to classrooms and other spaces, helping to reduce energy costs by an estimated 35 percent compared with a conventional system.

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Floor system

DeLuxe Building Systems. The non-combustible floor system solves problems in systems-built construction. It replaces poured concrete floors and is strong, lightweight and quick to install. With each factory-built module made lighter, the system enables higher construction. Less weight at every level means the system also uses less structural steel. It enables crews to install floors more quickly and at a lower cost.

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Sustainability platform

Sustainability Wiz. Sustainability Wiz is an online sustainability platform for school communities. It is based on independent research and years of practical experience with thousands of schools and gives teachers a unique solution for incorporating sustainability in meaningful ways into curricula, operations and culture. It enables administrators to make significant triple-bottom-line savings—economic, environmental and social—and it supports parental participation in learning.

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Lab safety

University upgrades safety equipment in research facility with new drench shower and eyewash units

University of Wisconsin–Milwaukee, Lapham Hall.

Bradley. Built in 1961, the University of Wisconsin–Milwaukee's Lapham Hall, a research facility for the department of biosciences, was in need of updates. Safety was a concern because only about 10 drench showers and eyewash units served the north wing, many of which no longer were working properly.

"Our emergency equipment was vintage 1960s," says Jon Krezoski, director of safety and assurances. "The old fixtures in Lapham were corroded, and routine testing was impossible. There were no floor drains near the showers, so we had to catch the water in a bucket to avoid flooding classrooms."

The university installed Barrier-Free Recessed Mounted Drench Shower and Eyewash units (Model S19-315BF) by Bradley. They are flush-mounted to the wall, making them fully accessible to individuals with physical disabilities and ideal for areas where space is a concern. In all, 27 fixtures were installed in the north tower, doubling the number of safety fixtures.

The unit is designed in a sturdy, one-piece cabinet for quick and easy installation, and maintenance is made easy with a wide-access panel. The brass stop-valve, tailpiece and fittings for the eyewash are hidden behind a locked, hinged door for convenient, yet restricted access.

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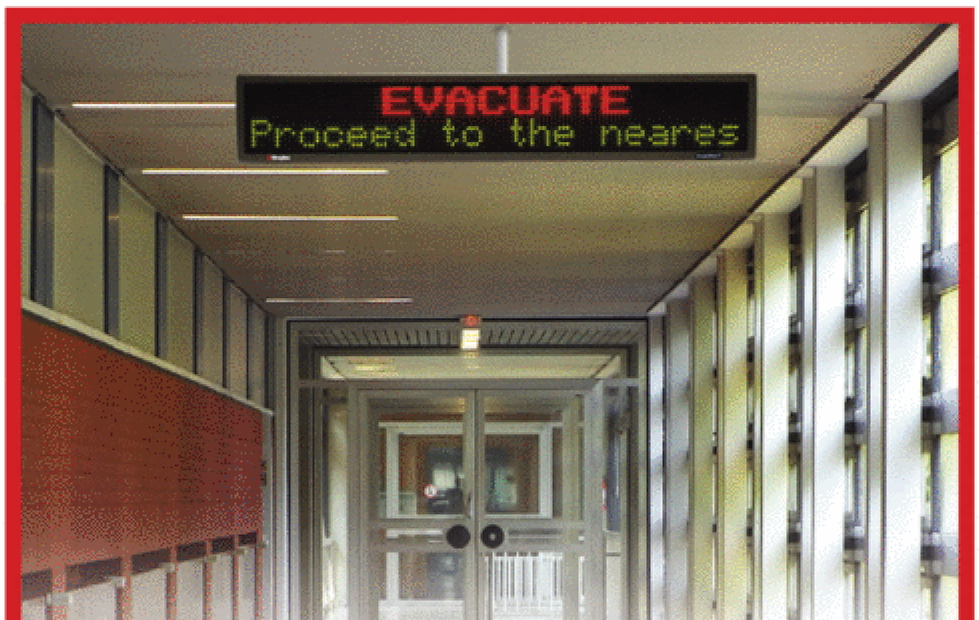

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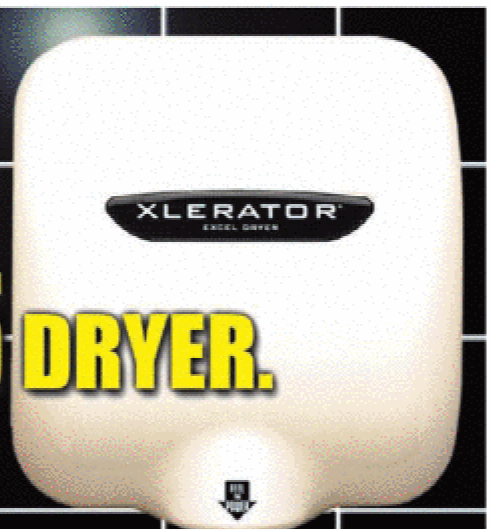

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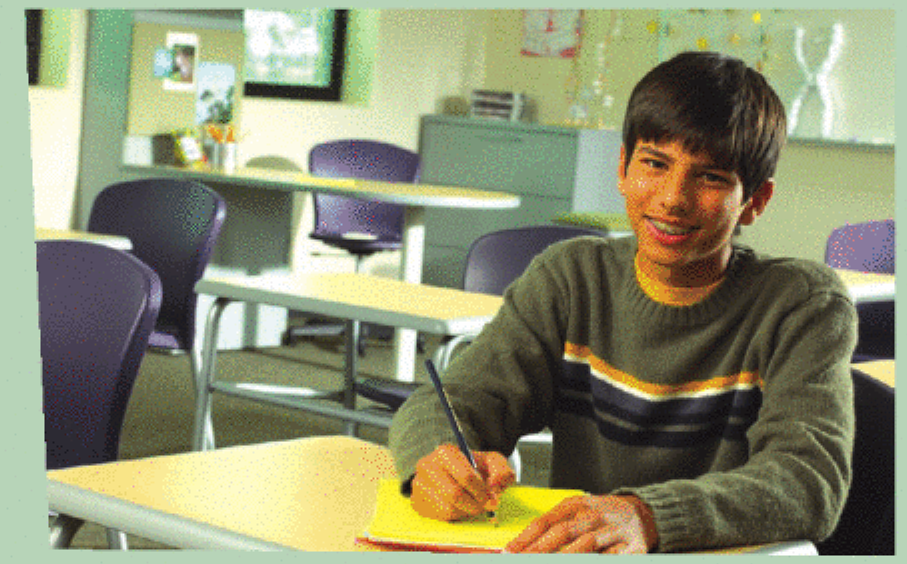

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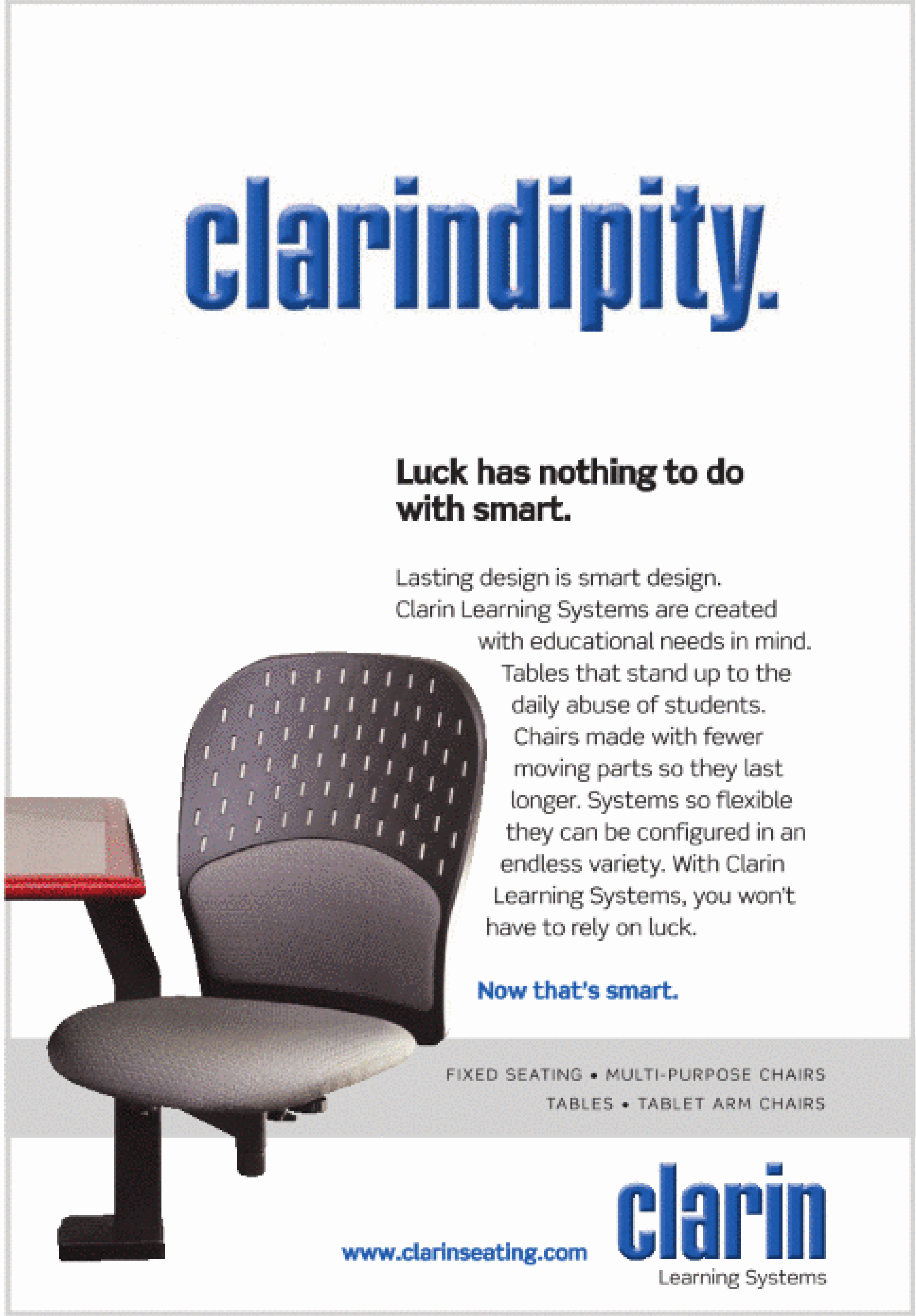

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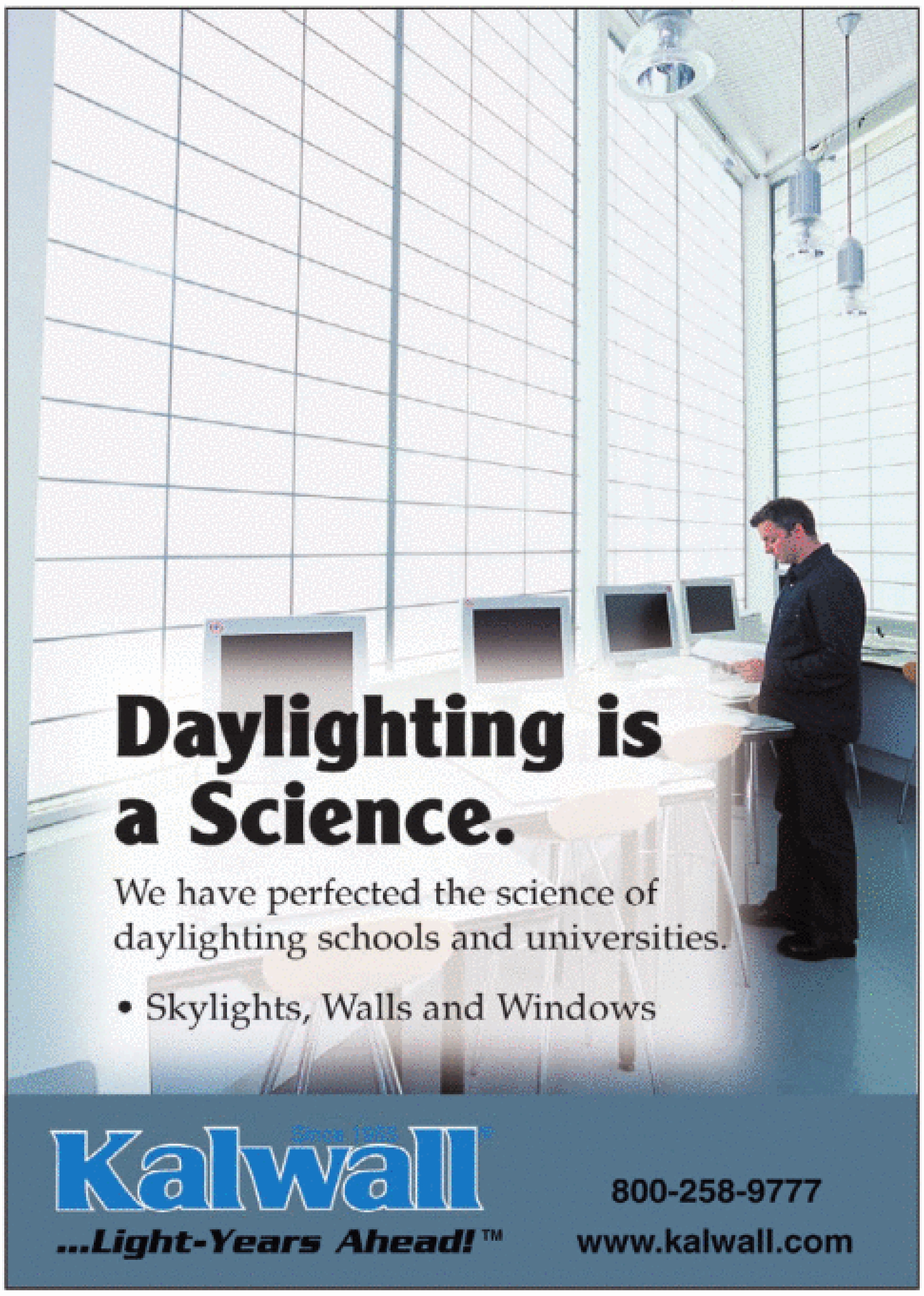

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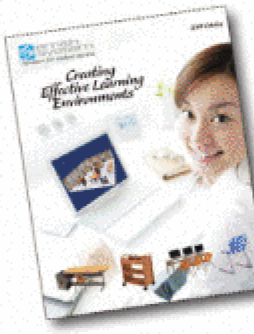

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Bradley

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